



PROGRAM EXECUTIVE OFFICER LITTORAL & MINE WARFARE



ANNUAL REPORT FY2010

PEO LMW HISTORY

Mission Statement: PEO LMW designs, delivers and maintains the systems, equipment and weapons needed by the warfighter to dominate the littoral battlespace and provide the Warfighter Assured Access!

Vision: PEO LMW develops, acquires and maintains operationally superior and affordable systems to provide assured access for U.S. and coalition forces in the littoral battle space. LMW's efforts are focused to best meet the Joint Warfighting Forces' requirements for dominance in the littorals and persistent access to that battlespace.

Background: The Program Executive Officer, Littoral and Mine Warfare (PEO LMW) is part of the Naval Sea Systems (NAVSEA) Command. Naval Sea Systems Command (NAVSEA) is the largest of the Navy's five system commands with a fiscal year 2010 budget of \$27.4 billion. With a force of 53,000 civilian, military and contract support personnel, NAVSEA engineers, builds, buys and maintains the Navy's ships and submarines and their combat systems.

Originally established in 1992 as the Program Executive Officer, Mine Warfare (PEO MIW), the PEO subsequently assumed increased responsibility for Undersea and Littoral Warfare programs and was redesignated as PEO Littoral and Mine Warfare (PEO LMW) in 2002.

LMW is comprised of eight program offices. These include programs in support of Mine Warfare, Littoral Combat Ship Mission Modules, Unmanned Maritime Systems, Maritime Surveillance Systems, Anti-terrorism/Force Protection Afloat, JCREW/EOD, Naval Special Warfare, and Remote Minehunting System. These offices lead the work of 226 programs contributing to the Global War on Terror (GWOT) today and the transformation of American capabilities for tomorrow. PEO LMW is comprised of 165 civilians and 34 military supplemented by Field Activities and other personnel responsible for development, acquisition and life-cycle support of these programs.

PEO LMW PROGRAM OFFICES ARE:

PMS 340 Naval Special Warfare (SEALS) Program Office

PMS 403 Remote Minehunting System Program Office

PMS 406 Unmanned Maritime Systems Program Office

PMS 408 Joint Counter Radio Controlled Improvised Explosive Device Electronic Warfare/Explosive Ordnance Disposal (JCREW/EOD) Program Office

PMS 420 LCS Mission Modules Program Office

PMS 480 Anti-Terrorism/Force Protection Afloat Program Office

PMS 485 Maritime Surveillance Systems Program Office

PMS 495 Mine Warfare Program Office

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A LETTER FROM THE PEO

MS. E. ANNE SANDEL, PEO LMW



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Mr. Roger Larkin, CAPT Thomas Gajewski, Mr. Phil Anderson
CAPT Dean Nilsen, Mr. Paul Hullinger, Mr. Al Schuler

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CAPT John Day, Ms. Kathy Pellicci, Ms. E. Anne Sandel,
Mr. Robert Stephenson, Ms. Erin Straub, Ms. Gail Baker

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The accompanying fiscal year 2010 *Program Executive Officer Littoral and Mine Warfare Annual Report (PEO LMW Annual Report)* provides the Secretary of the Navy (SECNAV), the Assistant Secretary of the Navy, Research, Development, and Acquisition (ASN RDA), Naval Sea Systems Command (NAVSEA), Resource Sponsors, and LMW personnel information about LMW programs. This report states PEO LMW's position and condition, its resources and risks, as well as its commitments. Finally, it discusses important financial issues and significant conditions that may affect future operations.

In FY10, PEO LMW's eight

Program Offices executed approximately \$1.7B across multiple appropriations in support of 226 programs and its mission to provide assured access for U.S. and coalition forces in the littoral battle space. PEO LMW's efforts were focused to meet the Joint Warfighting Forces' requirements for dominance in the littorals and persistent access to that battlespace. High level contributions by each program office include:

- The Naval Special Warfare Program Office [PMS 340] developed new Naval Special Warfare (NSW) capabilities and provided the latest NSW equipment to our forces including

small arms, modernized SEAL Delivery Vehicles, Shallow water combat submersibles, diving equipment and a host of other equipments that support our SEALs' warfighting requirements.

- The Remote Minehunting System Program Office [PMS 403] was newly redesignated as the RMS Program Office with a portfolio that specifically focuses on the two elements of the RMS, the Remote Multi-Mission Vehicle (RMMV) and the AN/AQS-20A minehunting sonar. Unmanned Maritime Vehicles were moved to the newly established PMS 406.

- The Unmanned Maritime Vehicle Program Office [PMS 406]

was stood up on July 16, 2010 with the mission to coordinate unmanned maritime systems acquisition efforts in addition to planning and executing unmanned maritime systems experimentation and technology maturation. PMS 406 will lead the U.S. Navy in all aspects of the unmanned maritime vehicle development and introduction to the Fleet.

- The Joint Counter Radio controlled improvised explosive device Electronic Warfare/ Explosive Ordnance Disposal (JCREW/EOD) Program Office [PMS 408] produced the latest generation of vehicle-mounted CREW systems. Since 2006, PMS 408 has developed and fielded over 21,000 modern technology CREW systems that includes 1500 CREW 3.1 units, the latest generation of dismounted CREW systems protecting joint forces from Improvised Explosive Devices.

- The LCS Mission Modules Program Office [PMS 420] made important strides in introducing the LCS Mission Module capability to the Fleet by early deployment of LCS 1 equipped with a specialized version of the SUW Mission Module, optimized for counter drug trafficking capability. In addition, PMS 420 supported the complete and successful Mission Package swap outs in LCS 1 and LCS 2 in the fall of 2010.

- The Anti-Terrorism/Force Protection Program Office [PMS 480] began implementation of low rate initial production of the

Shipboard Protection System Block 3. The Program Office continued development of the Identity Dominance System hand held biometric device and is working toward timely introduction to the operating forces.

- The Maritime Surveillance Systems Program Office [PMS 485] contributed significantly to maintaining high operational availability of the Surveillance Towed Array Sensor System (SURTASS) required by Theater Commanders. PMS 485 has completed outfitting all U.S. SURTASS ships with the TB-2A Twin-Line towed array, a significant improvement to detection capability.

- The Mine Warfare Program Office [PMS 495] made significant progress in readiness to operationally test the Organic Airborne Mine Countermeasures Systems (OAMCM) that will provide our Strike Groups of the future with the first ever organic in-stride mine avoidance capability. The systems comprising OAMCM are: Airborne Laser Mine Detection System (ALMDS), Airborne Mine Neutralization System (AMNS), and the Organic Airborne and Surface Mine Influence Sweep (OASIS). PMS 495 is dedicated "to deliver mine warfare capability to the warfighter as promised."

You will see several consistent themes throughout the PEO LMW 2010 Annual Report. Among them are:

- Delivering affordable and

reliable warfighting capability to the men and women on the front lines of our nations defense as our top priority;

- Including small businesses as an integral part of our portfolio through the Small Business Innovative Research Program (SBIR);
- Holding ourselves accountable to perform at the highest standards of performance and integrity

We are very excited about the progress we have made in 2010 and look forward to even greater successes in 2011. Of course none of the good things that were accomplished just happen; it takes people doing great things. And that is what the PEO LMW Team has contributed in 2010 so it is appropriate that I thank them for their outstanding performance this past year. They have given more than anyone could possibly expect with long hours, hard work, and tough but sound decisions in support of the warfighter.

I encourage all who receive this document to read the details and share in our 2010 accomplishments as well as our expectations for 2011. Thank you.

Very respectfully,

Anne Sandel

FY10 HIGHLIGHTS



Littoral Combat Ship Mission Modules Program

Littoral Combat Ship (LCS) Mission Module Equipment Meets Testing Benchmarks and Deploys Ahead of Schedule

LCS Surface Warfare Mission Package (SUW MP) #1 was subjected to accelerated developmental testing to support early deployment on board USS FREEDOM (LCS-1) in January 2010. FREEDOM, equipped with

this state-of-the-art mission module equipment, provided the operational commander with a counter-illicit trafficking capability that resulted in the capture of tons of cocaine. Moreover, in July 2010, LCS 1 demonstrated the fully integrated Surface Warfare Module Capability during the international Rim of the Pacific (RIMPAC) 2010 exercise off Hawaii, including successful tracking and firing exercise events. Early deployment of USS FREEDOM employed the SUW MP Gun Mission Module and the Maritime Security Module, proving the value of the Mission Package while gaining valuable operator feedback.

Other LCS Mission Module Program achievements include:

- The Mine Countermeasures (MCM) Mission Package

demonstrated end-to-end capability to detect, localize and neutralize mines and completed Phase 3 E2E testing at the South Florida Test Facility in October 2010.

- Gun Mission Module #2 Functional Integration Test (FIT) and End-to-End (E2E) testing being completed in August 2010 on board USS INDEPENDENCE (LCS 2).
- Complete Mission Package swap-outs were successfully completed on both LCS 1 in September 2010 and LCS 2 in November 2010 at the LCS Mission Package support Facility in Port Hueneme, California.
- Unmanned vehicle operations were fully assessed and verified for vehicle speeds, turns, and sensor deployment and retrieval capabilities.



PEO LMW Receives Value Engineering Award

In 2007, the Commander, Naval Surface Forces (COMNAVSURFOR) tasked the Littoral Combat Ship Mission Modules Program Office (PMS 420) to stand up an effort to determine the requirements, including a building and permanent location, for the Littoral Combat Ship Mission Package Support Facility (MPSF). The MPSF would provide a full range of life-cycle support for the Littoral Combat Ship Mission

Modules. This effort engaged a wide group of key stakeholders including: Commander, Naval Installations Command (CNIC), Naval Facilities Engineering Command (NAVFAC), PEO LMW/ (PMS 420), LCS Squadron (LCSRON) and the Naval Surface Warfare Center, Port Hueneme Detachment (NSWC PHD). The feasibility study conducted by NAVFAC employed cost engineering analysis tools, which supports future updates. The study found that being able to use an existing building to meet the facility requirement was not only cost effective, but allowed the Navy to meet important

milestones in its schedule to stand up the facility. The resulting savings/cost avoidance include:

- \$7.6M non-recurring cost avoidance (MILCON) or \$2.6M (Commercial Lease) non-recurring cost avoidance based on the decision to use an existing government owned facility over MILCON or commercial lease option respectively.
- \$900K (\$5.4M net 6-year) in annual cost avoidance or \$75K (\$450K net 6-year) in annual cost avoidance in using existing government owned facility vice either the commercial option or MILCON respectively.
- MPSF outfitting costs have been reduced by approximately \$400K through the utilization of materials and equipment obtained via Defense Reutilization and Marketing Office (DRMO)

Joint Counter Radio Controlled Improvised Explosive Device - Electronic Warfare (JCREW) Program

JCREW Program Reaches Delivery Milestone

The U.S. Navy's JCREW program reached a delivery milestone with the 1,500th CREW 3.1 unit completing production, July 8, 2010. CREW 3.1 is the latest generation of dismounted CREW systems protecting joint forces from Improvised Explosive Devices.

The JCREW program develops CREW systems and equipment for use by all U.S. military services and coalition and partner nations. This cutting edge technology has been delivered

with unprecedented speed and quality, earning respect from our warfighters in theater and recognition from the Department of Defense (DoD). In November 2009, the JCREW Program Office (PMS 408) was awarded the 2009 DoD David Packard Award for Acquisition Excellence.

More than 18,000 JCREW systems are currently deployed. The delivery of these systems provides improved protection for warfighters engaged in combat operations in both Operation Enduring Freedom and Operation Iraqi Freedom.

PMS 408 and industry partners continue to prevent troop casualties and minimize the number one threat in these theatres of operation.



Mine Warfare Programs

Next Generation Airborne Mine Countermeasures (AMCM) Systems One Step Closer

In 2010, two AMCM systems met significant milestones and completed major test events, moving closer to Initial Operating Capability: the Coastal Battlefield Reconnaissance and Analysis (COBRA) and the Airborne Laser Mine Detection system (ALMDS).

COBRA completed several test flights aboard the Fire Scout Vertical Take-off Airborne Unmanned Vehicle, marking the first such combination of these types of technologies. Testing was highly successful and the COBRA Block I system will enter Low Rate Initial Production under a Small Business Innovative Research (SBIR) Phase III contract. The first production unit is scheduled for delivery to the fleet in FY12.

Despite the catastrophic oil spill in the Gulf of Mexico near AMCM test sites, the ALMDS Program was able to remain flexible and adapt to conclude developmental flight testing. The ALMDS underwent testing on 30 flights over 33 days that included both day and night operations. The system addresses the surface

and near-surface component of the mine threat to international shipping and access assurance by military vessels. ALMDS represents a capability that does not exist in the current Mine Countermeasures inventory.

Development and testing of AMCM systems are crucial to the success of the Littoral Combat Ship Program and remain on track to support Mine Countermeasure Mission Package Development testing in FY11.



PROGRAM EXECUTIVE OFFICER LITTORAL & MINE WARFARE



PMS 340
Naval Special Warfare



PMS 403
Remote Minehunting System



PMS 406
Unmanned Maritime Systems



PMS 408
JCREW/EOD

SAHRV



Small arms



AQS-20



RMMV



MCM USV



SMCM UUV



Sea Lion



JCREW



SDV



RMS



PMS 420
LCS Mission Modules



PMS 480
Anti-Terrorism Afloat



PMS 485
Maritime Surveillance Systems



PMS 495
Mine Warfare

ASWMP



SUWMP



SPS



IDS



SURTASS



CLFA



ALMDS



OASIS



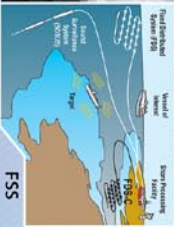
MCMMP



LCS Ships



VBSS



FY10 OVERVIEW

PEO LMW continued its mission throughout FY10 to develop, field, and support the best Expeditionary Warfare systems in the world for U.S. and Joint Forces. This year, PEO LMW grew from seven program offices to eight. The former PMS 403 (Unmanned Maritime Vehicle Systems) was split into PMS 403 (Remote Minehunting Systems) and the new PMS 406 (Unmanned Maritime Systems).

Each of the PEO's eight program offices made critical contributions in support of the LMW mission. For example, the Naval Special Warfare Program Office (PMS 340) achieved Milestone B approval in October 2010 for the Shallow Water Combat Submersible (SWCS), which will replace the current SEAL Delivery Vehicle (SDV). PMS 340 also began delivering advanced wetsuit and drysuit heating systems for Special Operations Forces (SOF) combat divers to improve performance in a greater variety of waters.

The restructured Remote Minehunting System (RMS) Program (PMS 403) achieved Nunn-McCurdy certification on 1 June 2010. This restructured Program will result in improved reliability for the RMS program. In August, the AN/AQS-20A program completed development testing.

The Unmanned Maritime Systems (UMS) Program Office (PMS 406) was established on 16 July 2010 to unify traditional acquisition and advanced development of UMSs into a single office. The program's Surface Mine Countermeasure Unmanned Underwater Vehicle (SMCM UUV) participated in four Homeland Defense harbor surveys and two Fleet mine warfare exercises.

The Joint Counter Radio-Controlled Improvised Explosive Device Electronic Warfare/ Explosive Ordnance Disposal (JCREW/EOD) Program Office (PMS 408) fielded thousands of modern CREW systems, which provide critical force protection capabilities to troops in theater. PMS 408 also completed Fleet and environmental evaluations of the Hull UUV Localization System (HULS), which will search ship hulls, piers, and pilings for mines and other threats.

The Littoral Combat Ship (LCS) Mission Modules Program Office (PMS 420) successfully performed Surface Warfare (SUW) Mission Package (MP) Gun Mission Module (GMM) Structural Test Firing (STF) and End-To-End (E2E) tests on board USS Freedom (LCS 1). The SUW MP was also utilized in the Rim of the Pacific (RIMPAC) exercise in Hawaii.

PMS 420 also successfully completed end-to-end testing on the Mine Countermeasure (MCM) Mission Package in preparation for developmental testing (DT) in 2011.

The Anti-Terrorism/Force Protection (AT/FP) Afloat Program Office (PMS 480) began Low Rate Initial Production (LRIP) of the Shipboard Protection System (SPS) Block 3, and continued operating the Individual Protective Equipment (IPE) pool, which

provided over 2,000 body armor systems and combat helmets to aviation and medical personnel.

On 3 May 2010, the Maritime Surveillance Systems Program Office (PMS 485) delivered a new TL-29A passive towed sonar array, converted from two TB-29A submarine arrays. This conversion demonstrates a possible future capability to use excess submarine assets at significantly reduced cost and production time.

The Mine Warfare Program Office's (PMS 495) Airborne Laser Mine Detection System (ALMDS) completed Developmental Testing (DT) in October 2010 with 34 successful flights. Additionally, PMS 495 oversaw the first successful flight of the Coastal Battlefield Reconnaissance & Analysis (COBRA) imagery system on the Fire Scout Vertical Takeoff and Landing Unmanned Aerial Vehicle (VTUAV).

These eight program offices received \$1.7B in FY10 to manage the 226 programs needed to assure continued dominance in the increasingly-important littoral regions around the world. Half of these programs are categorized as Acquisition Category (ACAT) I through IV, Abbreviated Acquisition Program (AAP), or Rapid Development Capability (RDC), and are delineated in the table below.

CODE	ID	II	III	IVT	IVM	AAP	RDC
PMS 340		1	7	18	32		
PMS 403	1	1					
PMS 408		2		8	6	18	
PMS 420	1						
PMS 480			1	1			
PMS 485		1					
PMS 495		4	6	2	3	1	1
TOTAL	2	9	14	29	41	19	1

PEO LMW FY10 FUNDING BY ACTIVITY

PEO LMW FY10 FUNDING BY ACTIVITY		
Field Activity	\$	%
NSWC PANAMA CITY	\$263,004,934	16%
CLASSIFIED	\$199,517,352	12%
LOCKHEED MARTIN	\$124,657,130	7%
NSWC CRANE	\$123,288,987	7%
SNC	\$63,705,000	4%
NORTHROP GRUMMAN	\$59,872,848	4%
ITT	\$46,768,032	3%
TECHDIV	\$44,853,898	3%
CACI	\$44,788,799	3%
NSWC DAHLGREN	\$44,673,029	3%
AAI	\$42,662,100	3%
LRM/HRM	\$33,207,184	2%
SPAWAR PACIFIC	\$32,427,073	2%
SAIC	\$19,988,182	1%
SPAWAR ATLANTIC	\$19,632,150	1%
OTHER	\$18,999,183	1%
RAYTHEON	\$14,841,117	1%
MILITARY SEALIFT COMMAND	\$14,549,564	1%
NUWC NEWPORT	\$14,159,729	1%
PEO IWS3	\$14,012,330	1%
NSWC CARDEROCK	\$13,953,784	1%
NAVAIR	\$11,714,025	1%
DOI	\$11,582,000	1%
ROCK ISLAND	\$10,268,003	1%
US ARMY	\$9,345,304	1%
NFESC	\$9,133,595	1%
JHU APL	\$8,257,564	0%
SOCOM	\$8,019,982	0%
HYDROID	\$7,628,000	0%
ENGILITY	\$7,363,000	0%
BAE	\$7,000,000	0%
NSWC PORT HEUNEME	\$6,748,503	0%
NAWC TSD ORLANDO	\$5,208,508	0%
ALL OTHER ACTIVITIES (UNDER \$5M)	\$236,384,575	14%
TBD	\$75,050,768	5%
Total Funding	\$1,667,266,232	

FUNDS FLOW & INDUSTRIAL BASE

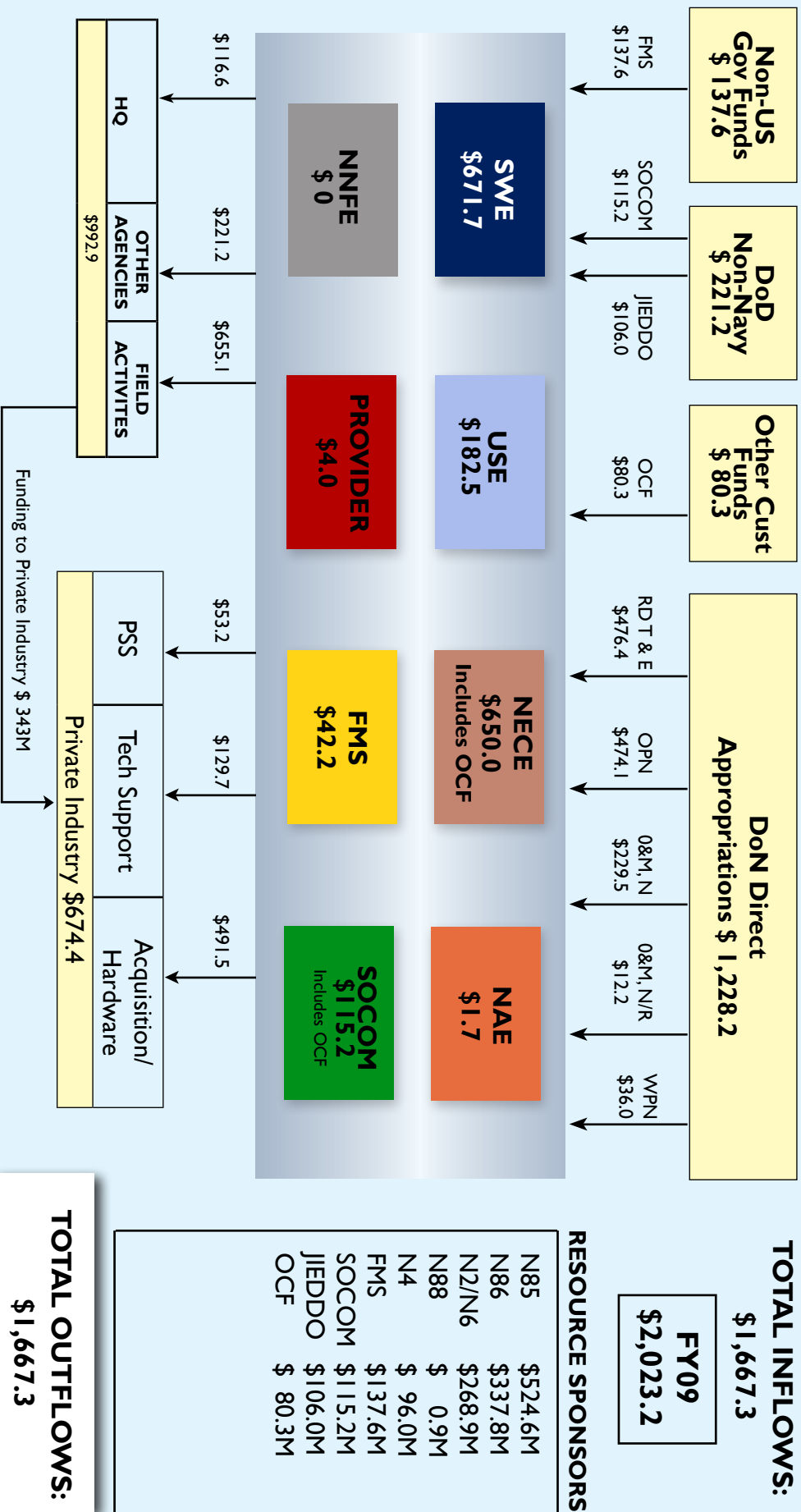
In FY10, LMW received \$1.7B to execute its programs from six Department of the Navy resource sponsors, Special Operations Command (SOCOM) and the Joint IED Defeat Organization (JIEDDO). \$137.6M was provided from Foreign Military Sales (FMS) and Other Customer Funds (OCF). The following pages summarize the distribution of FY10 funding (page 12), the extent and location of the LMW industrial base (pages 13) and the major activity recipients of LMW funding in FY10 (page 10).

The LMW industrial base has activities in 19 states, Washington, D.C. and four countries: the United Kingdom, Norway, Germany and Australia. 26 activities received approximately 80% of LMW funding in FY10, with 50% going to the top six activities.



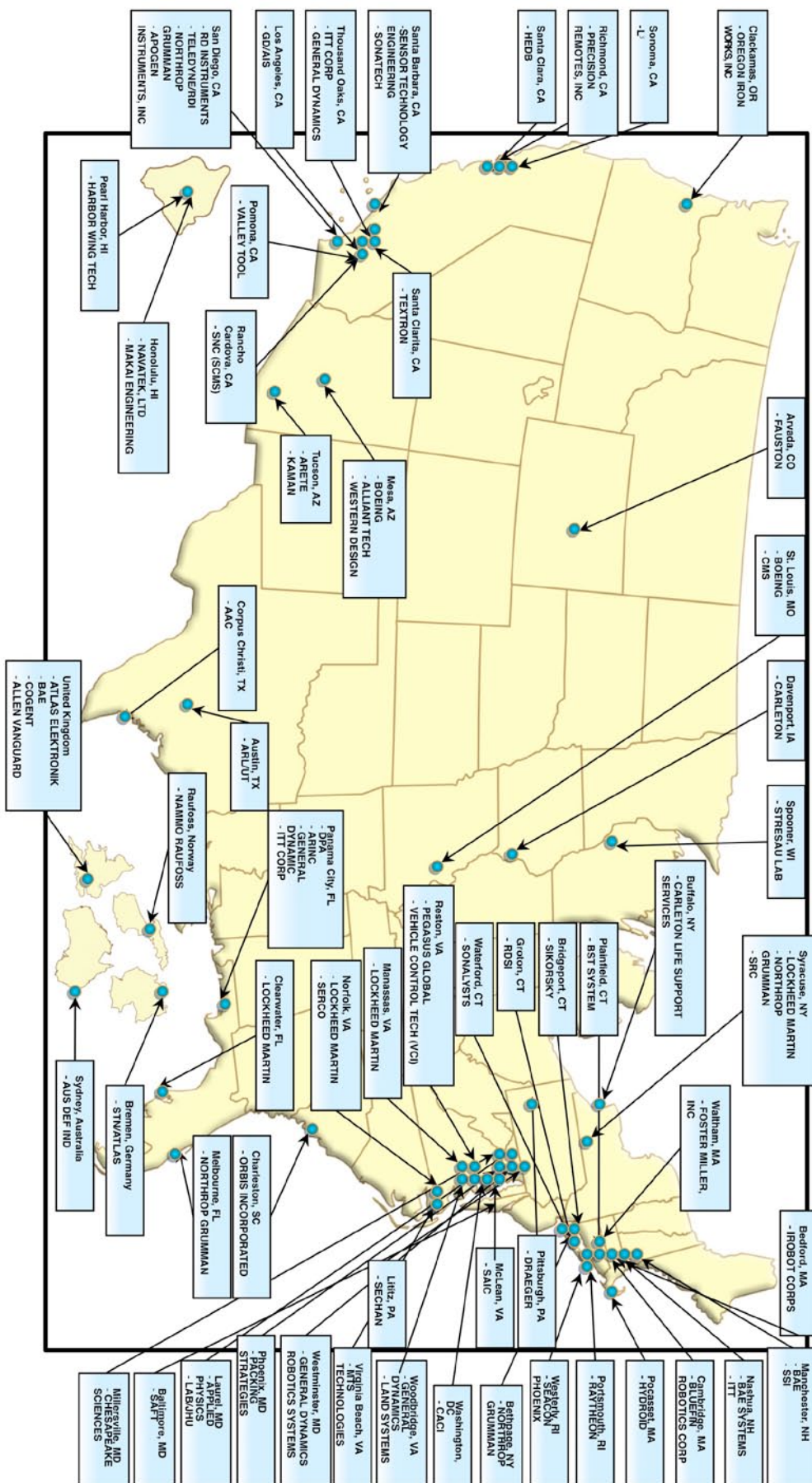


PEO LMW FY10 FUNDS FLOW APPROPRIATION (\$M)



Based on FY10 Program Office QER Data

PEO LMW INDUSTRIAL BASE 2010



PEO LMW Manages 226 Separate Programs!
2-ACAT 1; 8-ACAT II; 14-ACAT III; 69-ACAT IV
and 133 Non-ACAT Programs of Record

Working with Industry activities in nineteen states,
four countries and the District of Columbia.

PEO LMW ACCOMPLISHMENTS



SEAL Delivery Vehicle

PMS 340 – Naval Special Warfare

LMW supports the Naval Special Warfare (NSW) component of Special Operations through its Naval Special Warfare Program Office, PMS 340. PMS 340 supports both classified and unclassified mission areas.

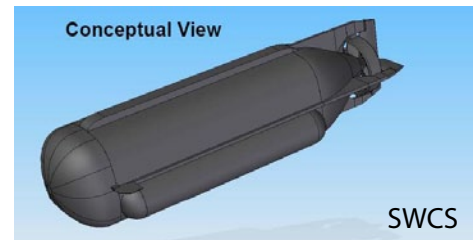
NSW is the maritime component for the United States Special Operations Command (USSOCOM). USSOCOM plans, directs, and executes Overseas Contingency Operations (OCO) to fight the war on terrorism as the lead combatant command. PMS 340 supports USSOCOM and its mission by sustaining and modernizing the current NSW equipment, while at the same time developing new capabilities to ensure America continues to deploy the world's best equipped team of Navy SEALs.

Naval Special Warfare is a tactical force with strategic impact. Its mission areas include unconventional warfare, direct

action, combating terrorism, and conducting ISR operations. Although Naval Special Warfare personnel comprise less than 1% of U.S. Navy personnel, they provide large dividends for a small investment. The Navy SEAL's proven ability to function across the spectrum of conflict and in operations other than war, coupled with their proven ability to provide real time intelligence and eyes on target, offer decision makers immediate and unlimited options in the face of rapidly changing crises around the world.

PMS 340 has responded to the needs of these operators in a resounding way, finding ways to rapidly insert new technologies into the fleet now, develop capability for the future, and support the surge in Operational Tempo with exceptional in-service support. Almost all of PMS 340's significant contribution to OCO is highly classified.

PMS 340's primary support role is the undersea mission area of Naval Special Warfare (NSW). This includes SEAL Delivery Vehicles (SDVs), Shallow Water Combat Submersible (SWCS), Semi-Autonomous Hydrographic Reconnaissance Vehicle (SAHRV), Hydrographic Mapping Unit (HMU) and all Diving Equipment, including two dive rigs,



recompression chambers, dive computers and other personal use diving gear. On a smaller scale, PMS 340 procures and maintains visual augmentation systems for WARCOM.

Although not an NSW specific support area, PMS 340 also manages the Navy's Small Arms Program including all weapons and mounts for .50 caliber weapons and smaller, the Navy's Premeditated Personnel Parachuting (P3) program and limited support for the Navy's Riverine Program.



Naval Special Warfare Undersea Support

The Shallow Water Combat Submersible (SWCS) program began as “SDV Next” in 2007 and achieved Milestone “A” approval in August of 2008. A System Requirements Review involving PMS 340, NSWC Panama City, and Johns Hopkins University was completed early in 2009. This was followed by completion of a draft System Requirements Document in October. PMS 340 gained industry involvement in 2009 via two Requests for Information in March, one for an integrated bridge system and one for a power system, and a draft Request for Proposal in November. In early December, PMS 340 conducted a highly successful Industry Day.

The SWCS program achieved Milestone “B” approval in October 2010. A source selection was conducted from June until October 2010. This led to award of contracts to Columbia Group and Teledyne Brown in October 2010 for Critical Item Development. A down select between these two companies is scheduled for June 2011. The winner will be awarded a contract to build a SWCS EDM with options to build and deliver ten (10) SWCS vehicles to replace the current fleet of SEAL Delivery Vehicles beginning in FY14. The winner will also have an option to provide full life cycle support for the SWCS boats in lieu of organic Navy logistics support.

Simultaneously, PMS 340 worked with Commander, Naval Special Warfare Command (WARCOM), Naval Special Warfare Group 3

and the Naval Surface Warfare Centers in Panama City, FL, and Crane, IN, to make substantial improvements to the capability of the current MK 8 MOD 1 SEAL Delivery Vehicles (SDVs). These improvements enhance the operational effectiveness (situational awareness, payload, and navigational capabilities) of the current fleet and will serve as a springboard for developing new technologies that will transition into the SWCS program. Among the many improvements that were made, the reconfiguration of two of the SDVs to allow them to dive to a deeper depth is a truly significant accomplishment. An OPNAV waiver to allow these boats to operate at the deeper depth was granted in early December 2010.

In addition to development of new technologies, PMS 340 worked with NSWC Port Hueneme, CA, to identify and resolve SDV obsolescence issues. All obsolescence issues have been identified. Lifetime buys have been accomplished where feasible. The only remaining issue is the navigational system. However, a plan to resolve this issue is in place and parts and required funding have been identified. The result of this effort is that the current operating fleet of SDVs can be sustained through the next several years until they are replaced by the SWCS vehicle, beginning in FY14.

In 2010, WARCOM decided to reduce the number of operational Semi-Autonomous Hydrographic Reconnaissance Vehicles (SAHRVs) from 17 to 8. This reduction was driven by reduced operational requirements

and budget considerations. PMS NSW worked with NSWC Panama City to develop layup procedures for the 9 SAHRVs taken out of service.

Hydrographic Mapping Units (HMUs) were likewise identified as an item for which there is no longer an operational requirement and, therefore, did not receive funding in FY11. PMS NSW is working with the Marine Corps to determine whether they can use the HMUs to meet a similar operational requirement.

Technology Development

The effort to develop a lithium ion battery to replace the current silver zinc batteries in the SDVs was placed on hold when the lithium ion batteries on the Advanced SEAL Delivery System (ASDS) caught fire and follow on destructive testing of the SDV lithium batteries at NSWC Crane produced similar results. PMS 340 continues to work with several offices in PEO LMW, SEA 05, PEO SUBS, Naval Surface Warfare Center-Crane and private industry to develop a safe lithium ion “type” battery.

In 2010, PMS 340 continued to work with the Office of Naval Research (ONR) and various companies in private industry to conduct diver thermal equipment testing and field evaluations, to make mods as a result of the testing/evaluations and to begin delivery of aero gel liners, boots, hybrid dry suits, electric gloves and heat pads. When integrated into wet suit and dry suit products, it will be possible to protect the Special Operations Forces (SOF) combat diver

through the full spectrum of water temperatures the divers expect to encounter worldwide.

PMS 340 also continued to work with the Applied Research Lab at the University of Texas (ARL/UT) and University of South Florida to improve the capability of the obstacle avoidance sonar (OAS) for the Semi-Autonomous Hydrographic Reconnaissance Vehicle (SAHRV). The increase in capability is to add lateral avoidance to the current vertical or “up and over” capability. With an open architecture design, PMS 340 expects to share its SAHRV hardware and software products with the Unmanned Maritime Systems Program Office (PMS 406), thus leveraging intellectual capital and OAS technology achievements.

Small Arms/P3/Riverine Support

PMS 340 is also the sole provider of U.S. Navy Small Arms (.50 caliber and below, 40mm grenade launchers, 40mm machine guns and related mounts). The program also provides .50 caliber machine guns and mounts to the U. S. Coast Guard (USCG) and is responsible for all USCG small arms, once federalized. PMS 340 manages just over 400,000 weapons at over 1000 Navy and USCG units worldwide providing In-Service Engineering, Weapon Procurement, Depot Level Maintenance, Serialization and Tracking, and mishap investigation support. During Fiscal Year 2010, PMS 340 worked with NSWC Crane to repair or refurbish over 30,000 weapons and procured over 5,300 weapons in direct support of war fighter needs. PMS 340 also completed the transition of the MK48 Mod 1, 7.62mm

lightweight machine gun program from USSOCOM to the U.S. Navy. This machine gun will replace the obsolete M60E3 and the MK43 lightweight machine guns.

In 2010, PMS 340 completed a Defense Acquisition Challenge (DAC) effort on light weight crew-served stabilized gun mounts. Two vendors participated in the competition; one developed by Motion Picture Marine and one developed by McKenzie River Partners. PMS 340 and NSWC Crane conducted live fire and at sea testing to determine the benefits of a stabilized system relative to current crew-served mounts. Upon completion of all testing it was determined that neither mount met the needs of the U.S. Navy and that further R&D efforts were needed. The potential application for a lightweight mount on Riverine craft and ground vehicles is high.

PMS 340 received delivery and began testing of the Remotely Operated Small Arms Mount

(ROSAM) MK49 Mod 1. The MK49 Mod 1 will be extensively tested and is expected to gain WSESRB concurrence by the end of this calendar year. PMS 340 has been working closely with NSWC Crane and the Original Engineering Manufacturer on the MK 49 Mod 1 to meet upcoming deployment needs.

In 2010, PMS 340 expanded the Premeditated Personnel Parachuting (P3) program to include Helicopter Rope Suspension and Training (HRST) equipment. This included the addition of approximately 225 items to an Authorized for Navy Use (ANU) list.

PMS 340 also supported Riverine Group ONE and the Naval Special Warfare Command in the maintenance and/or procurement of U.S. Navy service common programs, including Visual Augmentation Systems (VAS), Unmanned Aerial Systems (UAS), and Small Arms Training Systems.



Small Arms



Small Arms



AQS-20 Mounted on MH-60S



PMS 403 – Remote Minehunting System

RMS

SECNAV notified Congress on 17 December 2009 of a critical Nunn-McCurdy breach of the Remote Multi-Mission Vehicle (RMMV) portion of the RMS program. USD(AT&L) certified the restructured RMS Program on 1 June 2010. An Acquisition Decision Memorandum (ADM) was issued by USD(AT&L) designating RMS as an ACAT ID and identified specific Tasking/Action Items, Acquisition

Approach, Schedule, Milestone C Exit Criteria, and RMS Cost Estimate (Prepared by Director, CAPE). The ADM directed the restructured RMS program to fully implement a Reliability Growth Program (RGP) with the objective to obtain a minimum of 75 hours Mean Time Between Operational Mission Failures (MTBOMF) in order to meet the Availability Key Performance Parameter (KPP). An update to the Acquisition Program Baseline (APB) was approved by USD(AT&L) on 7 October 2010

and supports the restructured RMS Program as detailed in the USD(AT&L) ADM. The eighth LRIP (RMMV #10) was delivered in September 2010.

AN/AQS-20A

The AN/AQS-20A Sonar Mine Detection Set completed development testing of integration between MH-60S, Carriage, Stream, Tow and Recovery System (CSTRS), AN/AQS-20A, and the Common Tow Cable, in August of 2010. Resolution of DT issues have delayed operational test and evaluation, preparing for final Navy acceptance, to February 2011. The Summer 2010 Deepwater Horizon Oil Spill in the Gulf of Mexico impacted the DT schedule as well as shipboard (using R/V Athena) Flight Qualification Testing (FQT) off Panama City, FL. Testing was moved to the South Florida Ocean Measurement Facility off Ft. Lauderdale, FL until the oil spill was contained. In FY10, PMS 403 took delivery of six AQS-20A Low Rate Initial Production (LRIP) units (a total of twenty AQS-20A units are under contract, 8 have been delivered).



Remote Minehunting System



AN/AQS-20A



ASW USV

PMS 406 – Unmanned Maritime Systems

PMS 406 was established on July 16, 2010, marrying traditional acquisition and advanced development of Unmanned Maritime Systems (UMS) into a single office. The goal is to coordinate unmanned systems acquisition efforts in addition to directing specific experimentation and technology maturation. PMS 406's mission is to develop, acquire, deliver, and maintain operationally superior and affordable unmanned capability to our naval forces in the surface and undersea domains. Unmanned Maritime Systems (UMS) includes both Unmanned Undersea Vehicles (UUVs) and Unmanned Surface Vehicles (USVs), and fully integrated sensors and payloads as necessary to accomplish the required missions.

Surface Mine Countermeasure (SMCM) UUV

The Surface Mine Countermeasure UUV (SMCM UUV) User Operational Evaluation System (UOES) Increment 1 was employed by the Naval

Oceanography Mine Warfare Center (NOMWC) UUV platoon in four separate Homeland Defense harbor surveys and two Fleet mine warfare exercises during FY10. The UUVs were tested in very complex and difficult environmental conditions (high clutter, restricted harbors, highly variable sloped bottoms and bottom types, strong and highly variable currents). Through these events, a broad set of lessons learned addressing launch/recovery, mission programming, vehicle control, confined water data, change detection, and coordination between intra and interagencies were captured. The UOES provides an opportunity for fleet feedback on the role of UUVs in mine warfare, serving to engage the Fleet to gain experience with new technology



SMCM UUV

and systems, develop and refine system requirements, validate a concept of employment, develop tactics, techniques, and procedures (TTP), assess overall system suitability, supportability, and sustainment, and document lessons learned.

The SMCM UUV UOES Increment 2 underwent contractor in water testing and is planned to deliver in FY11 to the Fleet. Source selection for the SMCM UUV acquisition program Engineering and Manufacturing Development contract was initiated in FY10. Preparations for Milestone B continued with a review planned in FY11. The SMCM UUV acquisition program will incorporate ONR's Low Frequency Broadband sonar which is capable of buried mine detection and mine hunting in high clutter environments.

Unmanned Influence Sweep System (UISS)

The Unmanned Influence Sweep System (UISS) provides unmanned mine sweeping capability to the Littoral Combat Ship (LCS) MCM Mission Package. The system includes the MCM Unmanned Surface Vehicle (USV), designed by the Naval Surface Warfare Center Carderock, Combatant Craft Division; Unmanned Surface Sweep System (USSS), a prototype wide area unmanned magnetic and acoustic influence minesweeping system developed by Office of Naval Research; USV cradle; and USV support container. The craft Command and Control system, compliant with the Joint Architecture for Unmanned Systems (JAUS), was designed and integrated by SPAWAR. The system will be operationally

employed to evaluate performance characteristics for a follow-on MCM vehicle and payloads. Completed redesign of the sweep payload to increase reliability and reduce total ownership cost in FY10.

UISS was exercised during LCS MCM Mission Package End-to-End Phase 3 testing in September 2010, conducting 20 hours of at-sea operation. The LCS MCM Detachment participated in all test events with SME oversight. The system successfully demonstrated command and control capability with the LCS MCM Mission Package Multi-Vehicle Communications System.

Modular Unmanned Surface Craft Littoral (MUSCL)

PMS 406 worked with Office of the Chief of Naval Operations Special Warfare (OPNAV N851) and Riverine Group One (RIVGRU ONE) in NECC to initiate a new, small USV project to fulfill riverine user needs. The Modular Unmanned Surface Craft Littoral (MUSCL) is an X-class USV with Intelligence, Surveillance, and Reconnaissance (ISR) capabilities for the Riverine environment. This USV will be capable of real-time monitoring of suspicious vessels, personnel, and activity along waterways or under bridges and piers, identification of enemy forces and IEDs, and surface (optical and IR) and subsurface (sonar) imaging of the waterway



and shoreline. A Preliminary Design Review was completed in FY10 and delivery of three systems is planned in FY11.

Harborwing AUSV

Construction of the Harbor Wing X-2 USV began in FY10. The X-2 prototype is a USV with a COTS trimaran hull and a Harbor Wing designed, rigid Wing Sail capable of long duration ISR missions. Leveraging prior efforts with the X-1 prototype in FY09, the X-2 will be an engineering development vessel to test the capability of the unique, full scale, rigid Wing Sail design. Construction and testing of the vessel is planned to be completed in FY11.

Advanced Development

This responsibility was assigned to PMS 406 when it stood up in July 2010 for the planning and execution of UMS prototype developments, supporting UMS experimentation and Fleet exercises, facilitating CONOPS development, maturing UMS

technologies and transitioning S&T capabilities into acquisition programs. The current experimentation focus is on Large Displacement UUVs (LDUUV), leveraging existing commercial capability to demonstrate persistent ISR missions. The Navy's long-term vision for LDUUV encompasses capability in every dimension of persistence, C3I/ connectivity, autonomy, stealth, survivability - providing offensive and defensive roles in every stage of the fight. LDUUV is a game-changing technology, providing force multiplication, increased reach and awareness into the undersea environment.



PMS 408 – JCREW/EOD

PMS 408 is the PEO LMW Program Office responsible for systems acquisition and life cycle support for the two mission areas that are central to the current Overseas Contingency Operations – Joint Counter RCIED Electronic Warfare (Joint CREW) and Explosive Ordnance Disposal (EOD). The Joint CREW Program develops, fields, and sustains electronic countermeasures systems to protect deployed forces against Radio Controlled Improvised Explosive Devices (RCIEDs). The EOD Program provides systems and equipment to EOD forces of all four Services to counter the threat posed by unexploded ordnance (UXO). Both of these programs provide the critical capabilities needed to meet the operational requirement to provide military services with effective, suitable, and supportable systems to counter the threat posed by UXO and Improvised Explosive Device (IEDs) to prevent and

reduce combat fatalities. The criticality of PMS 408 systems is demonstrated by the fact that seven of the thirty four systems tracked by DoD's Counter-IED Senior Integration Group to support the troop surge in Afghanistan are PMS 408 managed systems.

Joint CREW Program

A terrorist wielding an IED has become the ubiquitous face of the ongoing conflicts in the Middle East. While IEDs have been a favorite tool of terrorist groups worldwide for many years, the dramatic use of the IED as a strategic weapon in Afghanistan, Iraq, and around the world has required a concerted and greatly expanded effort to develop and field systems to address this deadly threat. The IED has been the leading cause of troop casualties in Operations IRAQI FREEDOM (now NEW DAWN) and ENDURING FREEDOM (OIF/OND/

OEF). As a result, in July 2004, DoD established a Counter-IED taskforce dedicated to countering this threat. Subsequently, this taskforce transitioned into the Joint Improvised Explosive Device Defeat Organization (JIEDDO) and expanded its efforts to generate solution sets with national laboratories and Warfare Centers/Directories via contractors and academia.

In October 2005, the Secretary of Defense designated the Secretary of Navy as the Executive Agent for Military Ground-Based CREW Technology, based on the Navy's extensive experience with electronic warfare and EOD counter-IED systems. This designation established the U.S. Navy as the primary focal point for DoD CREW technology development, system acquisition, and fielding decisions. The Assistant Secretary of Navy for Research, Development, and Acquisition (ASN RDA) subsequently directed PEO LMW to assume the acquisition and lifecycle support responsibility for the program, and in December 2005, PMS 408 was formed by merging the existing EOD Program Office with acquisition professionals dedicated to the Joint CREW mission. Since 2006 PMS 408



EOD

has developed and fielded over 21,000 modern technology CREW systems. The majority of early efforts of the JCREW office were funded by the Joint IED Defeat Organization (JIEDDO) in response to US Central Command (CENTCOM) Joint Urgent Operational Need Statements (JUONS). These systems focused on current technologies to provide an immediate solution to the catastrophic IED attacks in both Iraq and Afghanistan. In 2009 and 2010 a majority of these systems transitioned for ongoing sustainment to the responsible Services, with PMS 408 providing support for all Navy and Air Force-owned and operated CREW systems. Fiscal Year 2009 and 2010 were transition years for JCREW as the acquisition focus shifted from rapid acquisition to a more deliberate development program to achieve a long-term CREW solution. The technology transition from independent “stove piped” CREW systems with differing architectures and capabilities to a DoD wide common (and open) architecture for all variants (mounted, dismounted, and fixed site) is known as JCREW 3.3. The Capabilities Development Document (CDD) for JCREW was developed by all four Services and approved in December 2008 (JROC Memo 248-08). The JCREW program (also referred to as JCREW 3.3) moved through the Preliminary Design Review (PDR) and Critical Design Review (CDR) in FY10. The resultant design is on track to provide the Department of Defense its first open architecture CREW system capable of cost effectively maintaining pace with an ever evolving threat.

CREW funding has continued

shifting from JIEDDO to Navy for RDT&E and from JIEDDO to the Services for procurement and sustainment per the guidelines of DOD Directive 5101.14 and Congress.

2010 JCREW Program In Review

In FY 2010 the PMS 408 JCREW team continued to field thousands of modern CREW systems to theater. Each delivered CREW system places critical force protection capability in the hands of US, Coalition, and Partner Nation forces. A summary of PMS 408 production and fielding as of 30 September 2010 is as follows:

Mounted Systems: At the end of FY10, the CVRJ V1 mounted system production effort was drawing to a close and the production of the more capable CVRJ V2 mounted system was ramping up. Over 21,000 CVRJ systems have been built to date.

Dismounted Systems: In FY10, we produced 1,500 CREW 3.1 Thor III systems, Thor III is a very capable new system developed to replace the stopgap QRD (Guardian) system. All the Thor III

systems have been transferred to the US Army and US Marine Corps. Essentially all were immediately fielded to OEF/OND.

International Systems: OSD provided Coalition Readiness Support Program (CRSP) funding in October 2009 for procuring additional systems (latest Block 20A version and a new Block 40 version under development) for use by coalition forces in OEF.

A new IDIQ contract was awarded on 15 December 2009. 420 Block 20A systems were produced in FY10; production continues in FY11.

In FY10 PMS 408 continued the support and sustainment of currently fielded CREW systems. With over 20,000 systems fielded to OEF and OND, coordination and communication with theater was critical to successful operations and support of fielded CREW systems. The CONUS CREW community (PMS 408, JIEDDO, PM CREW, USMC CREW and PM AMC) coordinates weekly with its counterparts in Iraq and Afghanistan, Combined Task Force Paladin, USF-1 and CENTCOM. Bi-weekly Secure



Video Conferences (SVTC) are augmented by regularly scheduled weekly phone conversations with forces in both Iraq and Afghanistan to identify and resolve any operational problems and discuss future requirements and plans. Coalition forces are equally supported by similar bi-weekly SVTCs and phone conversations.

In FY09 PMS 408 established a coordination team which travels regularly to both Iraq and Afghanistan to facilitate the face to face resolution of systems problems, logistical challenges, and personnel issues. These efforts have continued in FY10 with a greater emphasis on supporting the increase in force levels in OEF as US Forces in Iraq drew down in FY10.

Explosive Ordnance Disposal (EOD) Program

The “companion” office within PMS 408 is the EOD Team, which supports the dynamic and complex mission of the Navy and Joint Service EOD communities. EOD Technicians render safe all types of ordnance: conventional and unconventional; chemical, biological, and nuclear ordnance; this includes Improvised Explosive Devices (IEDs) and Weapons of Mass Destruction (WMD). They perform land and underwater detection, location, identification, render-safe, and recovery (or disposal) of foreign and domestic ordnance. They conduct demolition of hazardous munitions, pyrotechnics, and retrograde explosives using detonation and burning techniques.

EOD Forces forward deploy and fully integrate with the various

Combatant Commanders, Special Operations Force (SOF), and various warfare units within the Navy, Marine Corps, Air Force, and Army. They are also called upon to support various government and civilian law enforcement agencies.

EOD technicians’ missions include many different environments, climates, and areas of the world. In addition, Navy EOD Forces utilize many assets in accomplishing their missions, from open and closed-circuit SCUBA and surface-supplied diving rigs, to parachutes and accompanying gear for insertion from fixed-wing and rotary aircraft, to small boats and tracked vehicles. The PMS 408 EOD Team is the lead agent for equipping these forces with the assets, information, and support they need. Like their

JCREW counterpart, the assets this group provides perform a continuing crucial role in supporting US and Allied Forces around the world.

Joint Service EOD Program

The EOD Team supported a variety of systems and equipment during 2010. These include the MK 1 and MK 2 EOD Robots (Man Transportable Robot System (MTRS)), which is used by EOD technicians to perform remote reconnaissance at incident sites by locating, examining, and identifying Unexploded Ordnance (UXO) and IEDs. The EOD community has demonstrated the criticality of ground robotic systems to the protection and preservation of human life. Through the end of FY10, over 2024 of these systems were produced and delivered to all



four services since program inception in FY06. An additional 250 MTRS platforms were ordered in late FY10 in response to a surge requirement from the Counter-IED Senior Integration Group. Delivery of those systems will begin in October 2010 and be complete in January 2011. The rapid evolution of robotic technologies and the pace of advances in computer processing power and capacity, coupled with the lessons learned from field operations of the MK 1 and MK 2 EOD Robots, have resulted in the recognition of the need for more capability in ground robotics systems. In FY10, PMS 408 began an acquisition program for the Advanced EOD Robotic System (AEODRS), an integrated family of systems composed of systems used for dismounted operations (Increment 1), tactical operations (Increment 2), and operations dealing with a base or infrastructure (Increment 3). Once developed, the systems will show advancements in autonomous point to point navigation, automated manipulation, and standardized interfaces across all configurations. PEO LMW designated the AEODRS Program an ACAT IVM in July 2010, and the Capabilities Development Document was approved in October 2010. The Milestone B decision is expected in the first quarter FY11.

The EOD community has continued to expand their mission to include the identification of nuclear radiation sources, and the AN/PDX-2 Radiac Set has helped fulfill this need by providing a portable capability that enables special mission EOD forces to rapidly respond to an increasing number of simultaneous threats worldwide.

PMS 408 deployed an additional 128 sets to Joint Services EOD forces in FY10, bringing the total delivered to the four Services to 538.

The Transmitting Set Countermeasures (TSC) AN/PLT-4 system is a man portable EOD Electronic Countermeasures (ECM) device intended to provide enhanced protection specifically to EOD technicians while conducting EOD missions against suspected Radio Controlled IEDs (RCIEDs). The AN/PLT-4 offers a wider range of coverage against threat devices and can provide greater protection distances for EOD operators. Production continued in FY10 with an additional 303 systems being delivered to the Joint Service EOD forces for a total of 1105 systems since program inception in FY08.

The Joint EOD Decision Support System (JEOD DSS) is an information technology/software intensive program that provides Joint Service EOD technicians with enhanced situational awareness, collaboration, and access to near real-time data sharing and reporting. JEOD DSS is comprised of three major components: JEOD Network (JEODNET), Portal, and the Mobile Field Kit (MFK) Software (SW). Other components include an unclassified version of MFK SW and a configured laptop computer with accessories (known as N4). The program successfully achieved the following milestones in FY10: Full Deployment Decision (January 2010), Initial Operational Capability (June 2010), and Full Operational Capability (September 2010).

In response to CENTCOM Joint Urgent Operational Need

Statement (JUONS) CC-0100, CNO N857 requested that a coordinated response and execution plan be developed between PEO Unmanned Aviation and Strike Weapons (PMA 263), as the lead program office, and PMS 408 in a supporting role, to acquire an EOD Unmanned Aerial System (UAS). Approximately 100 systems were deployed to EOD Forces in Operation New Dawn (formerly Operation Iraqi Freedom)/ and Operation Enduring Freedom to provide tactical reconnaissance, surveillance, and target acquisition. In addition, an Analysis of Options (AoO) was initiated by PMS 263 to determine how well the current UAS commercial market can satisfy current EOD operational needs. The AoO will be completed and briefed to the four Services in the first quarter of FY11.

In support of CENTCOM JUONS CC-0255, 259 Ahura FirstDefender RMX systems were procured in FY10. The handheld system utilizes Raman spectroscopy to identify commercial, military, and homemade explosives and their precursors. System delivery began in September 2010 and will be completed in November 2010.

Marine Mammal Program (MMP)



Sea Lion

Long-Term Overview: 2020 remains the planning horizon for the Navy's inventory of marine mammals, in accordance with the Strategic Plan for the U.S. Navy Marine Mammal Program and the Animal Inventory Management Plan (AIMP). New technology capabilities that can potentially replace these systems will continue to be tracked on the near- to mid-term horizon, 2013 and out-years.

System Enhancements: Efforts continued to meet revised system requirements for conducting mine reconnaissance and clearance tasks in support of amphibious warfare mission areas. During 2010 the Fleet Marine Mammal Systems (MMS) Continuous Improvement Program (CIP) Engineering Change Proposals (ECPs) that were approved in 2008 were continued. These ECPs will add the following capabilities to Fleet MMS: Deep Water Marker Enhancement, 11m Rigid Hull Inflatable Boat (RHIB) Stern-Gate Launch & Recovery System Outfitting, MK 6 Target Set and Interdiction Enhancement and the Navigation and Mapping System Enhancement. The 11m Rigid Hull Inflatable Boat (RHIB) Stern-Gate Launch & Recovery System Outfitting is on schedule

to be completed in 2012; the other three CIP efforts are on schedule to be completed in 2011.

The MK 6 Mod 2 MMS at Submarine Base Kings Bay, GA achieved Full Operational Capability (FOC) in September 2008. MK 6 Mod 2 is a civilian operated, integrated underwater portside security system that uses dolphins and sea lions to protect harbors, anchorages, and individual assets. Dolphins and sea lions assist in preventing attempted attacks on SUBASE assets and successfully disrupt swimmer/diver attacks on these assets. The Defense Threat Reduction Agency (DTRA) initially sponsored the development of the Dolphin Interdiction Grabber which is now being tested and matured through the Navy's MMS CIP. Initial results have been favorable and the capability is planned to be incorporated into the MK 6 Mod 2 Kings Bay Installation in FY11.

Based on the success of this program, the Navy (Strategic Systems Programs (SSP)) is installing a similar system in Bangor, Washington to complement the overall force protection program. The final

Environmental Impact Statement (EIS) for this installation was approved for release by the Assistant Secretary of the Navy for Installations and Environment (ASN (I&E)) and in September 2009, the EIS was made available to the public in the federal register. In November 2009, the Record of Decision was signed. The program installation for Bangor, WA is on schedule.

Animal Care Program: All Navy marine mammals continue to receive the best care available. The Navy's marine mammal husbandry program provides the proper mix of a well-rounded regime of behavioral and physical conditioning, and full time veterinary observation, care, and medical research. The Navy's care program is being executed in accordance with the OPNAV-approved AIMP, which details the methods and requirements necessary to maintain the optimal mix of fleet ready marine mammals to support their assigned mission. The Navy's animal care activity continues to engage with research personnel and Fleet users to develop new animal care equipment for monitoring the health status of deployed mammals.

Maritime/Homeland Defense Program

The MK 12 Acoustic Firing System (AFS) Product Improvement Project (PIP) #1 (AFS PIP #1) is a product improvement to the AFS and includes size reduction of the Acoustic Firing Device (AFD) (MK 58 Mod 1), fewer parts, acoustic programming/test link, field-installable battery to allow AFD reuse in non-explosive applications, removable hydrophone float,



and electro-magnetically safe around ordnance. Improvements to the MK 92 Mod 1 Acoustic Firing Control Transmitter (AFCT) included software for acoustic programming/test link and a menu for high or low voltage initiation. The MK 66 Mod 0 Firing Device Base Coupling (FDBC) was additional interface equipment added for high voltage initiation.

The AFS PIP #1 has completed the Engineering Development Model (EDM) phase, including MK 66 FDBC explosive tests. MK 66 FDBC has achieved a 1.4s Hazard Classification Assignment, Final (Type) Qualification, and Insensitive Munitions (IM) Certification. Both low magnetic signature and Commercial Off-the-Shelf (COTS) lithium batteries have been certified by the Naval Ordnance Safety and Security Activity (NOSSA) for Fleet use onboard ship and ashore.

Production contracts were awarded to Hi-Shear Technology Corporation for the MK 58 Mod 1 AFD and Teledyne RISI Incorporated for the MK 66 Mod 0 FDBC. The MK 58 Mod 0 AFDs have been delivered to the Fleet to meet FOC and the MK 92 Mod 1 AFCTs will begin delivery during 3rd Quarter FY11 and complete delivery during 1st Quarter FY12. The MK 58 Mod 1 AFD and MK 66 Mod 0 FDBC are to begin delivery to the fleet during 3rd Quarter FY12.

The MK 15 Mod 1 Underwater Imaging System (UIS) with Diver Visual Interface System (DVIS) is an Abbreviated Acquisition Program (AAP). Production of the UIS is complete, with a total of 222 systems produced. The UIS is visual sonar that provides day or night detection

and classification of underwater contacts; it is the replacement for the standard AN/PQS-2A handheld sonar. The system provides a precise navigation for EOD divers using a long base-line system. The DVIS is a product improvement that enables divers to use the UIS in low visibility/high turbidity environments and was incorporated into the Mod 1 designation of the MK 15 UIS.



A product improvement for the UIS Diver Handheld Unit (DHU) was initiated in FY10 to field lithium batteries to replace the current sealed lead acid batteries that were fielded with the original system. This new battery will exceed the mission time requirement without battery change out by the operators. The batteries were delivered to NAVEODTECHDIV for magnetic screening and quality assurance checks and are being delivered to the Expeditionary Support Units (ESU) for fielding. This fielding will be completed in FY11. A second product improvement to replace the current 9V lithium batteries in the MK 8 beacons with a rechargeable lithium ion battery is also underway.

The MK 16 Mod 1 Closed-Circuit Mixed-Gas Underwater Breathing Apparatus (UBA) combines the mobility of a free-swimming diver with the advantages of mixed-gas diving. This capability

makes closed-circuit UBAs well suited for EOD operations and operations requiring a low acoustic signature. Additionally it has a low magnetic signature to allow divers to safely approach magnetic influence actuated ordnance underwater to a maximum depth of 300 feet of sea water (FSW). Improvements in gas usage, dive duration, and depth capabilities provided by the UBA greatly increase the effectiveness of the EOD divers.

An Engineering Change Proposal (ECP) for MK 16 Mod 1 Modernization is currently being initiated to address Diminishing Manufacturing Sources and Material Shortages (DMSMS) issues by replacing those components with current technology to satisfy repair needs as spare parts currently in inventory are now projected to be depleted in FY12. This modernization project will provide sustainment to meet near-term EOD diving needs by ensuring that these components are available for replacement as needed. The project will include designing new components as replacement parts, as well as providing a Government-owned Technical Data Package (TDP) for life cycle support savings over the next 10 years.

The Diver Hull Inspection Navigation System (DHINS) program, also an AAP, is an open architecture underwater survey system that combines data from multiple underwater sensors and the ship's hull drawings to accurately track and record the diver's underwater movements and mark items of interest. A Foreign Comparative Test (FCT) effort was conducted for DHINS to explore the feasibility and

potential effectiveness of foreign manufactured products.

A Limited Production DHINS was developed that utilizes high frequency sonar and a modified MK 15 UIS navigation system mounted in a diver-propelled push cart. Fifteen Limited Production units were delivered to the fleet during FY10 for User Operational Evaluation System (UOES) to assist in refining technology, requirements, tactics and procedures to support the Full Rate Production Decision and contract award currently scheduled for FY11. IOC is scheduled for FY13.

The Maritime EOD Training, Ranging, & Evaluation Systems (METRES) will provide Navy EOD operational forces a means of developing and refining tactics, techniques and procedures for safe EOD diver and diver support craft operations in the vicinity of influence actuated underwater explosive threats. A foreign comparative test (FCT) initiative was initiated in FY10 to evaluate alternative METRES prototypes. By leveraging prior development efforts of allied nations for their MCM diver forces, the prototype solutions offer a potential replacement for the obsolete and out-of-service diver evaluation units (DEUs) procured in the early 1990s.

The METRES initiative will evaluate field-portable signature measurement systems used by allied Navy EOD and Clearance Diving forces for potential USN EOD use. The METRES potentially offers a viable solution for improving operational safety of Navy EOD diving in against an influence minefield threat. The ongoing FCT initiative will field

an interim METRES capability by FY12.

Small Unmanned Underwater Vehicle (UUV) Program Support To Navy Expeditionary Combat Command (NECC) Forces

The MK18 Mod 1 Swordfish UUV system comprises three 7.5" diameter vehicles and auxiliary equipment and maneuvers autonomously as it conducts systematic searches in predetermined areas. The system is capable of performing low visible, pre-assault, advance force exploration, and reconnaissance missions in support of amphibious landings, MCM operations.



The system can perform rapid object localization to confirm the presence or absence of mines in the amphibious objective areas, utilizing specialized sensor, navigation, communication, propulsion, and power subsystems. The system has also been proven operationally effective and suitable in confined areas (inlets, berthing areas, between piers/pilings, confined channels and rivers) and open areas (large open channels, harbors, and anchorage areas)

from 10 to 300 FSW. This system is currently fielded at EOD Mobile Unit One (EODMU-1) and Mobile Diving and Salvage Unit Two (MDSU-2).

Existing MK18 Mod 1 SWORDFISH UUV systems were upgraded to achieve a Search-Classify-Map-Identify (S-C-M-I) capability with the addition of 900/1800 kHz dual frequency side scan sonars. FOC for the S-C-M-I system was achieved in March 2009. In FY10, procurements were initiated to execute upgrades to the MK18 Mod 1 Swordfish UUV system. Technologies identified in technology transition agreements (TTAs) between PEO LMW and the Office of Naval Research

(ONR) were validated for technical maturity through structured test and evaluation of prototype hardware and in accordance with the established technology readiness assessment (TRA) process. The Block B upgrades will provide increased standoff communications, improved navigation, and enhanced user interfaces. The first article system will be delivered 2nd Quarter FY11, and fielding will be complete in FY12.

The MK 18 Mod 2 Kingfish UUV system is an enhanced version of the MK 18 Mod 1 UUV system. It is composed of two 12.75" lightweight vehicles and auxiliary equipment and is capable of performing low-visibility exploration and reconnaissance missions in support of amphibious landing, Mine Countermeasures (MCM) operations, and hydrographic mapping, primarily in the very shallow water (VSW) zone. The system is also capable of operating in both the deep water (61m to 200m) and the shallow water (12 m to 61 m) zones. The system provides enhanced performance over the MK 18 Mod 1, particularly in high-clutter environments which are common in many areas of the VSW zone. The vehicle is capable of maneuvering autonomously and conducting systematic searches in pre-determined areas while operating in any of these zones. The MK 18 Mod 2 system will enable tactical integration with

EOD Mobile Unit One (EODMU-1) assets to include the MK 18 Mod 1 Swordfish UUV system.

The MK 18 Mod 2 system was delivered to the Space and Naval Warfare Systems Center Pacific (SSC Pacific) in March 2009 for engineering evaluation, which concluded in December 2009. During FY10, the system was evaluated by EODMU-1 UUV operators for concept of operations (CONOPS) and tactics, techniques and procedures (TTP) developments, employing the user operational evaluation system (UOES) approach. A preliminary operational capability (POC) declaration is planned for FY11 and IOC in FY13.

Efforts are underway to evaluate the next generation small synthetic aperture mine-hunting (SSAM) sonar as a product improvement to the MK 18 Mod 2 system. The SSAM will provide significantly higher resolution imagery and increased range

compared to the real aperture sonar (RAS) currently employed to support this capability. Delivery is planned for FY11 and will be followed by training, engineering evaluation, and UOES.

The Hull UUV Localization System (HULS) program will field small, autonomous/semi-autonomous unmanned vehicles to support rapid searches of ship hulls, piers, and pilings for limpet mines and other threat devices. This AAP began with contracts being awarded for two HULS prototypes one from Foster-Miller, Inc and one from Bluefin Robotics. Based on the results of the early test and evaluation, UOES testing began for the Bluefin system in March 2009. A Fleet evaluation was completed in February 2010, and the environmental evaluation followed in April 2010. The HULS is scheduled for First Generation Production Decision approval in FY11. IOC is scheduled for FY13. A total of 7 HULS systems are planned for EOD fielding.





PMS 420 – LCS Mission Modules

The Littoral Combat Ship (LCS) is a fast, agile, and networked surface combatant ship optimized for littoral operations. It is designed to counter littoral mine, submarine, and surface threats to assure maritime access for Joint Forces. The underlying strength of the LCS is its innovative modular design approach, which enhances operational flexibility. The capability to rapidly install interchangeable mission packages into the seaframe is fundamental to this approach.

The hierarchical concept of modularity that yields a mission package fielded onboard a LCS is described in three layers:

Mission Systems = Vehicles, Sensors, or Weapons

Mission Module = Mission Systems + Support Equipment + Standard Interfaces

Mission Package = Mission Modules + Mission Crew Detachments + Aircraft

The LCS Mission Modules Program Office (PMS 420) employs modular design techniques through an interface control document that will allow future mission package systems to adapt to evolving mission requirements. This document will also allow for the permanent installation of computing environment hardware aboard the seaframe, which can be tailored to mission package needs, and the temporary installation of modular software specifically configured for the planned mission. These computing environments are integrated with the seaframe to automate tactical data flow on and off of the seaframe.

PMS 420 integrates the modules within each mission package into LCS seaframe module stations, or zones, which have defined sizes, structures, and service connections. The Mission Package Computing

Environment (MPCE) is installed on the seaframe as the standard interface with the ship's combat management system, thereby seamlessly integrating the mission package systems' hardware and software environments with those of the ship. As a result, mission capability, consisting of manned and unmanned systems and sensors, can be packaged – or modularized – in containers and rapidly added or removed to or from the platform.

PMS 420 designs the mission modules and systems to fit inside standard ten- or twenty-foot International Organization for Standardization (ISO) compliant support containers, flat racks, or cradles. The LCS mission modules have designated zones configured to accommodate mission modules via a standard interface. Using ISO support containers accommodate shipping, storage, and container movement from shore to ship and ship to shore. Package reconfiguration occurs using pre-positioned mission packages or mission packages transported into the theater by air or sea and staged near the LCS operating area.

Each mission package provides warfighting capability for one of three focused mission areas: Mine Countermeasures (MCM – detection and neutralization of mine threats); Surface Warfare (SUW – maritime security missions and prosecution of small boats); and Anti-Submarine Warfare (ASW – countering shallow water diesel submarine threats).

These mission packages can be exchanged in order to reconfigure the ship for different

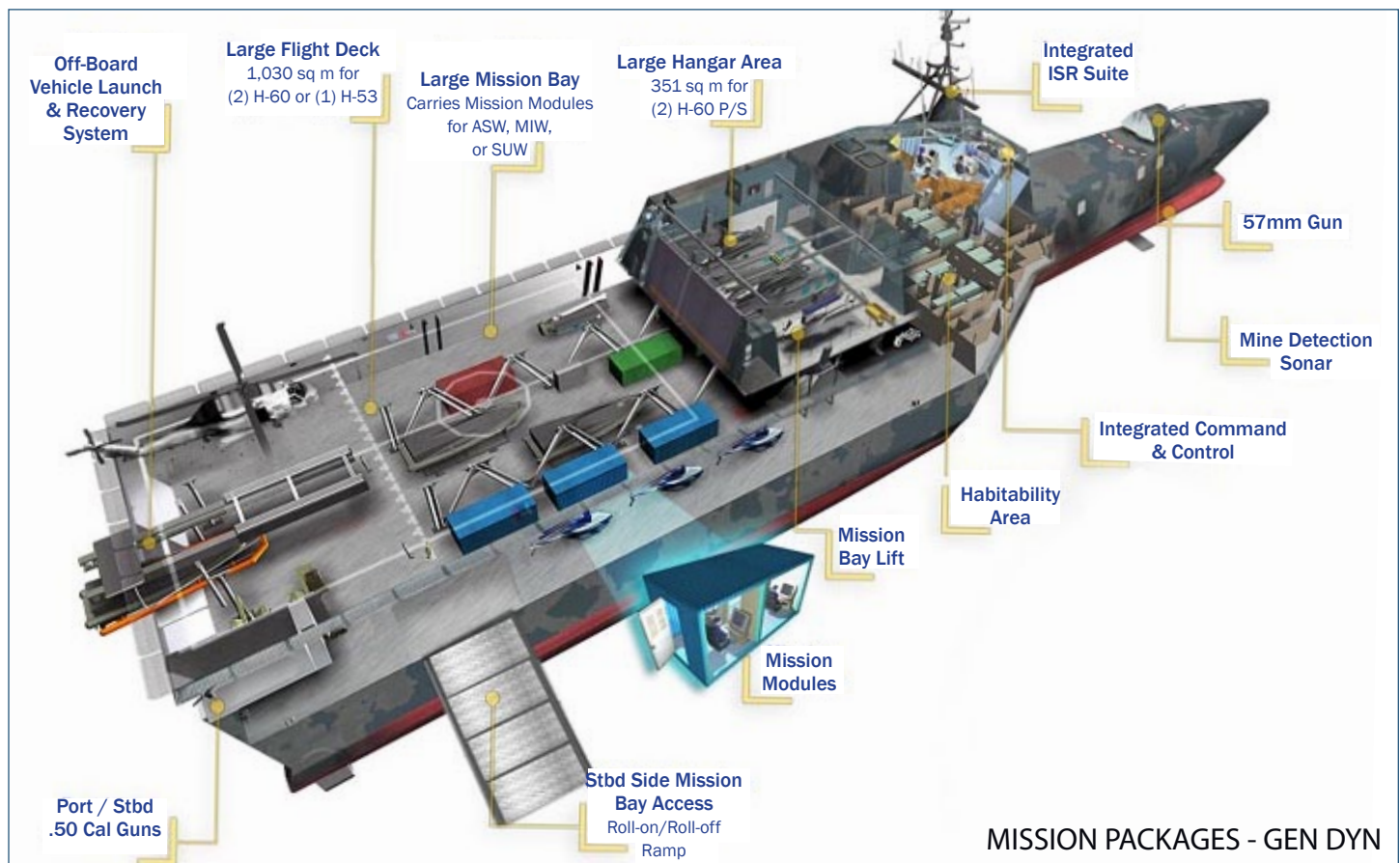
missions in a short period of time, giving the Combatant Commander a uniquely flexible range of responses to changing warfighting requirements. To achieve this flexibility, the Navy is developing and procuring specific numbers of mission packages to meet the Fleet's warfighting requirements. The quantity of each mission package type differs based on analysis of projected operational needs; therefore, mission packages are developed and procured separate from the seaframes. This allows the LCS warfighting capability to quickly adapt to evolving threats using improved technology. This concept also helps to reduce the overall cost of the LCS and will allow a smaller crew to operate and maintain the ship's core systems.

As mission systems mature, they will be added to the mission

package, greatly improving the ship's capabilities and enhancing its flexibility. These systems provide warfighting capability that will be continuously improved through an evolutionary acquisition development process. Mission package modular capability provides an open architecture environment that enables future rapid insertion of new technologies, giving the Combatant Commanders a modular, focused mission capability to provide assured access against threats in the littorals. Innovative industry partners are able contribute at periodic intervals to improving warfighting capabilities due to this open architecture construct. The Navy also benefits because new technologies not only compete for initial inclusion in a focused mission capability, but they also compete on a recurring basis to remain the technology

of choice for a given capability. This "best of breed" selection process, guided by operational requirements, is accomplished through a government-led peer review process that identifies, qualifies, and tests candidate technologies from a variety of sources, including academia and commercial ventures.

PMS 420 accomplished several important goals in FY10. Team members successfully completed an Integrated Logistics Assessment (ILA), and also conducted a successful SUW MP Gun Mission Module (GMM) Structural Test Firing (STF) and End-To-End (E2E) test on board USS FREEDOM (LCS-1) with the Surface Warfare Package. The Surface Warfare Package also participated in the Rim of the Pacific (RIMPAC) exercise in the Hawaii operation. In July 2010 the Surface Warfare package,



consisting of two Gun Mission Modules, one MH-60S, and the Maritime Security Module, embarked upon USS Freedom (LCS 1), successfully completing two SUW MP Scenarios. The program also completed a successful SUW and MCM Mission Package swap out, removing the EDM#1 GMM's.

Finally, the Mine Countermeasure package successfully completed End-to-End Phase 3 Testing, which demonstrated UISS and RMS operations in preparation for MCM MP DT in 2011, and making substantial progress toward evaluating tactics, procedures and conducting data analysis ongoing to quantify progress against KPPs.

PMS 420 is working towards an open business model that

will create value in a fast-paced development environment by including a variety of external concepts for solving identified technical and business problems. Ideally, the use of the PEO's key assets and of partnering organizations from government, industry and small businesses, and academia will create value for all parties involved. This business model is founded on an evolutionary acquisition process led by PMS 420, which facilitates the rapid and incremental incorporation of capability updates. Time-phased capability increments (mission modules and related systems) are planned for capability insertion throughout the life of the program.

PMS 420 has leveraged the Small Business Innovative Research (SBIR) program to allow small

businesses to submit proposals on LCS Mission Modules-related topics. PMS 420 currently has several ongoing SBIR topics in Phase II, including the Multi-Vehicle Mission Planner for Unmanned Vehicles, Automated Monitoring and Reconfiguration of Remote Sensor COMMs Networks, DC Power Converter, and Automated Test and Re-Test (ATRT). Under the Navy SBIR Commercialization Pilot Program (CPP), PMS 420 is addressing the use of Composite ISO Containers for LCS Mission Modules, initially with the Maritime Security Module, which will provide a significant impact on weight reduction.



Mission Modules



PMS 480 – Anti-Terrorism/Afloat

PMS 480 is the PEO LMW program office responsible for shipboard and expeditionary anti-terrorism systems. In FY10, PMS 480 began implementation of low rate initial production (LRIP) of the Shipboard Protection System (SPS) Block 3 (AN/SSQ-132 (V)). Significant efforts were dedicated toward complying with the requirements of the Navy Data Environment (NDE), Weapons System Explosive Safety Review Board (WSERSB), and Software Systems Safety Technical Review Panel (SSSTRP) for SPS Block 3 Release 1 (R1) and engineering efforts toward SPS Block 3 Release 2 (R2). Near the end of FY10, PMS 480 initiated the update of the SPS Block 3 R1 Non-Permanent Change (NPC) to Permanent Change onboard the USS DONALD COOK (DDG 75). PMS 480 also began design efforts for other ship classes (LSD, LPD, and CVN), with the goal of achieving the first installation onboard USS HARPERS FERRY (LSD 49) before FY12. SPS LRIP authority is for up to twelve installations, leading to OPEVAL and a full rate production decision in FY14.

PMS 480 continued development

of the Identity Dominance System (IDS) (AN/PYX-1) hand held biometric collection device. The Undersecretary of Defense (Acquisition, Technology & Logistics) delegated execution of the program back to the Navy as an ACAT IVT program. Due to the progress made and maturity of the effort, milestone B was achieved in September 2010. In FY10, PMS 480 selected two vendors, one will continue to refine the software and one vendor will integrate the software vendor's product into their hardware to deliver an integrated device, from among five previously selected SBIR contract winners. Milestone C is currently scheduled for 2QFY12.

Previously, PMS 480 provided a response to a NAVCENT Urgent Operational Needs Statement (UONS) to provide non-lethal weapons (NLW) to expeditionary and afloat forces. COTS acoustic hailing devices and handheld



dazzling lasers were fielded to four TYCOMs. During FY10, PMS 480 continued new equipment training for the lasers, as well as training and certifying administrative laser safety officers. This ensures all units planned for receipt will have trained personnel prior to deployment to NAVCENT's AOR. ASN (RDA) designated the Navy Non-Lethal Effects Program as ACAT III in November 2010.

PMS 480 executed procurement actions for over \$100M of initial outfitting shipboard AEL and Navy Expeditionary Combat Command (NECC) table of allowance equipment, totaling over 2,700 line items.

PMS 480 continued operation of the individual protective equipment (IPE) pool, providing over 2,000 body armor systems and combat helmets to aviation squadrons and expeditionary medical personnel in support of GWOT deployments. Additionally, over 30,000 ballistic plates were inspected to confirm their integrity—including over 12,000 in support of NECC activities. In CY10, PMS 480 leveraged established processes and began implementation of a concept for performing pre-deployment refresh of body armor and helmets for deploying ships, to include outfitting with RFI systems and offload, inspection and refurbishment of retrograde IPE.

PMS 480 contributed significantly to the development of a formal purchase description, outlining specifications for the Naval Security Forces Vest (NSFV). This is an improved body armor system to provide increased protection to ATPF watch standers. The NSFV system will also replace the Navy Flak Vest currently worn by crew served weapons operators, resulting in a single shipboard standard for body armor.



PMS 485 – Maritime Surveillance Systems

The Maritime Surveillance Systems Program Office (PMS 485) procures systems which provide vital tactical cueing and give the U.S. Navy real ASW tracking power with versatile, wide-area ocean surveillance systems that provide mobility, rapid response, and long endurance. They are the Navy's only primary long range undersea detection capability. Specific mission areas supported include area sanitization, expeditionary force support, and barrier operations. Principle peace time missions are to provide Indication and Warning surveillance of potential hostile submarines in areas of U.S. interest, collect operational data on these vessels, and support Fleet readiness exercises. During periods of increased tension, these systems can maintain track of potential threat submarines and surface ships, conduct surveillance of seaports, transit lanes, and choke points, and

provide area sanitization for carrier strike groups. Direct reporting to the warfighter makes the surveillance "real time."

The Maritime Surveillance Systems Program Office comprises four main components – the Fixed Surveillance Systems (FSS), the Mobile Surveillance System, the Integrated Common Processor (ICP), and the Distributed System Group (DSG).

The Fixed Surveillance Systems provide long-term, undersea surveillance in open-ocean and littoral waters. FSS consists of the Sound Surveillance System (SOSUS); the Fixed Distributed System (FDS); and FDS-Commercial (FDS-C), a variant of FDS. FDS is a low-frequency passive acoustic surveillance system employing fiber-optic technology. It consists of long arrays and clusters of hydrophones distributed on the sea floor. FDS-C uses COTS items

to reduce procurement and lifecycle costs.

The Mobile Surveillance System consists of the Surveillance Towed Array Sensor System (SURTASS), a low frequency surveillance system that employs a long twin-line array of hydrophones towed from a surface ship designated T-AGOS, and Low Frequency Active (LFA), a vertical source array with active transducers. The LFA sources are deployed and retrieved through a center well located amidships and use the passive array as the active receiver. A compact version of LFA (CLFA) was developed for installation on the smaller SURTASS platforms. SURTASS/LFA communications include SHF ship-to-shore data transmission, and secure voice and Global Command and Control System - Maritime (GCCS-M) interface for real-time contact reporting. ICP is the signal and information processor and display system for FSS and SURTASS/LFA that provides detection, classification, localization, and reporting of undersea and surface targets.

Given the ongoing ASW needs, as well as continuing requirements to support Maritime Domain Awareness (MDA), PMS 485 is continually pushed by Theater Commanders to maintain its high SURTASS/LFA Operational Availability (Ao), well in excess of system requirements. SURTASS ships answered the Fleet's call with consistent results. PMS 485 finished FY10 with a SURTASS Ao of 97.9.

All U.S. SURTASS ships are now outfitted with the TB-29A Twin-Line (TL-29A) towed array. The Twin-Line configuration provides directional noise rejection

capabilities and enables bearing resolution without needing to turn the ship, which allows increased flexibility for the Commander at sea. This array is based on the TB-29A array architecture used on submarines and can be towed in very shallow waters. Leveraging submarine assets is an excellent way to help the Navy get the most for taxpayer dollars and is a theme that is echoed throughout PMS 485's transformational efforts. To ensure future synergy, PMS 485 and PMS 401 signed a Memorandum of Agreement (MOA) for continued collaboration and sharing of data on the design, procurement, fielding, and support of applicable array improvements and maintenance efforts.

2010 has been a challenging year to maintain the TL-29A passive towed array. The high tempo of Fleet operations has resulted in an increase in array module failures. PMS 485 has taken several steps to increase module repair throughput and reduce the number of Not Ready For Issue (NRFI) passive array modules, including augmenting the repair capacity by bringing on additional repair facilities. In spite of the challenges keeping the arrays spared, we have been able to maintain a high operational availability (Ao). Another challenge heading into 2010 was maintaining fleet operations with no spare array available. On 3 May 2010, PMS 485 delivered a new TL-29A converted from two TB-29A submarine arrays, demonstrating a possible future capability to use excess submarine assets at significantly reduced cost and production time. PMS 485 also completed development and fielding of mitigation solutions to

minimize the serious risk to towed arrays from fishing nets and lines found in the harsh littoral ocean operating areas. Improvements included: installation of a Delta Wing over the Y-joint where the array connects to the tow cable to reduce net entanglement; installation of the SURTASS Headline And Roll Control (SHARC) device in place of paravanes to improve tow stability and reduce net entanglement; installation of a tow cable tension meter to provide an indication of tension forward of the towed array; installation of an Array Knowledge Board display to increase awareness of the array status and indicators of entanglement for the shipboard technicians; and installation of a Y-Joint depth sensor to provide an indication of tow depth at the Y-Joint. PMS 485 continues to look at options for a follow-on to the TL-29A. PMS 485 has a small business initiative with SABEUS under Congressional Plus-up to develop and produce an all-optical array, and low cost alternatives to some key array components (e.g. VIMs, tow cable, and pressure/temp sensors). SABEUS successfully conducted a 32 channel test at Lake Pend Oreille and has completed development of a 160 channel test article, with lake testing pending.

One of the revolutionary changes in ASW systems that PMS 485 developed is the Low Frequency Active (LFA) system, which is used when a target is too quiet to be detected by the passive SURTASS system alone. LFA is a set of acoustic transmitters suspended by cable beneath the SURTASS vessel. These projectors produce a series of underwater sound pulses or

pings. These active pulses reflect off an object and are received by the TL-29A. SURTASS/LFA is capable of detecting and tracking quiet hostile submarines at ranges in excess of current passive sonar systems. The Navy has investigated the use of other acoustic and non-acoustic technologies to fill this need, but, to date, only low frequency active sonar is capable of providing the long-range submarine detection capability the Navy needs. In addition to lifecycle support of the LFA system, PMS 485 supports an ongoing Active Improvement Program that provides for at-sea testing of LFA systems, post-mission active data analysis, active performance modeling and performance prediction, employment analysis and recommendations, and exercise planning and execution through participation in fleet exercises.

In 2010, PMS 485 continued development and test of a lighter weight, compact version of LFA. Compact LFA (CLFA) is a variant of LFA designed for use on the smaller T-19 Class T-AGOS ships. The new design reduces the active system weight by 1/2 in CLFA. PMS 485 is responsible for managing the design, development, procurement, and installation of the CLFA system on SURTASS vessels, including the EDM installed on USNS ABLE. USNS ABLE conducted a series of at-sea development and operational tests during 2010 and participated in the Fleet Exercise VALIANT SHIELD. The CLFA system successfully met its design and operational requirements. Additional testing is planned in 2011, but CLFA is now available for Fleet training and evaluation. USNS ABLE is also available to the Fleet as

a fully operational asset. PMS 485 has begun procurement of CLFA production systems—one CLFA production system was procured in FY09 and a second in FY10, with installations in FY11 and FY12. The first ship with a production CLFA capability, USNS EFFECTIVE, completed its overhaul conversion and began installation of the CLFA system in preparation for testing in 2011.

The Integrated Common Processor (ICP) has the capability to process and display data from all fixed and mobile underwater systems. It takes advantage of automation advancement, array technology improvements, hardware insertions, and the common software components of the submarine and surface USW systems. ICP, like the Acoustic Rapid COTS Insertion (ARCI) program, utilizes an Open Architecture business model, where commercial items are used to the extent practicable, software development is uncoupled from hardware procurement, and innovation is increased through competition and the participation of academia and “non-traditional” players. Like the TL-29, ICP brings commonality between submarine systems and mobile and fixed surveillance systems. ICP completed numerous software upgrades at Integrated Undersea Surveillance System (IUSS) ship and shore locations, working toward a common ICP architecture baseline in FY12 that will be applicable to all IUSS sensors.

Significant events in 2010 include:

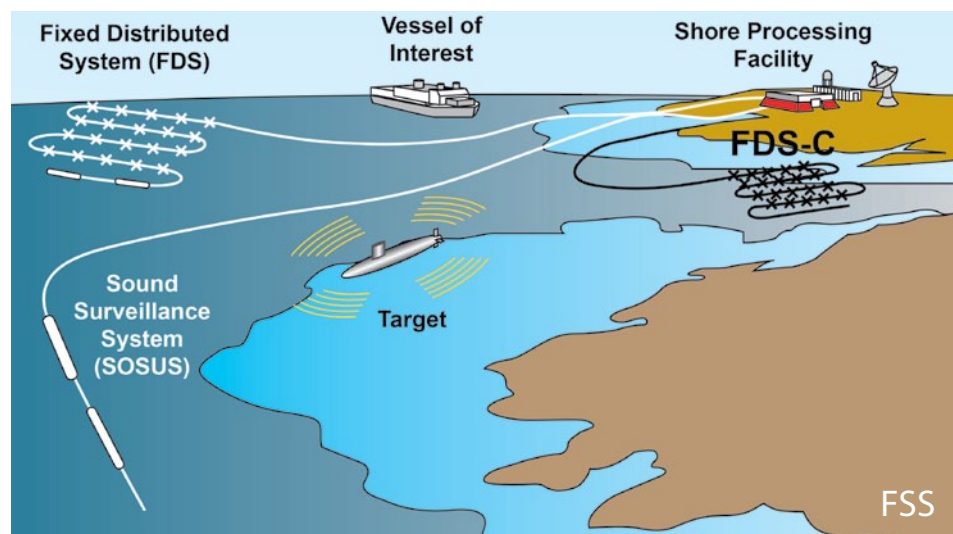
- ICP installations at NOPF Dam Neck, NOPF Whidbey Island, Commander Undersea

Surveillance (CUS), and the Office of Naval Intelligence (ONI)

- Integration of ICP with the Submarine Multi-Mission Team Trainer (SMMTT)

The Distributed Systems Group (DSG) was formed to fulfill Anti-Submarine Warfare (ASW) and maritime surveillance capability gaps in shallow or deep water environments. DSG continued efforts to identify and develop

effective bi-static operations. The AMAIS tool will enable tactical forces to model, simulate and develop an effective Concept of Operations (CONOPS). Analysis of LWAD 09-5 data showed AMAIS to be a fairly mature model with useful results. The test results were briefed to the ASW community at the National Defense Industrial Association’s Undersea Warfare Technology Conference. DSG conducted a Critical Design Review with ASW



distributed sensor technologies and tools to field and enhance Navy wide-area queuing systems. Primary efforts focused on in FY10 were ASW Multi-static Active Interoperability Simulation (AMAIS); the Shallow Water Surveillance System (SWSS) Risk Reduction Program (RRP); Joint Capability Technology Demonstration (JCTD) initiatives with NORTHCOM (Dark Fusion) and NUWC (NORTHERN Surveillance Tracking And Reporting - NORTHSTAR); and the ONR Rapid Technology Transition (RTT) project, CLFA Off-Board Acoustic Source Expendable (COBASE).

AMAIS is designed to help avoid mutual interference and conduct

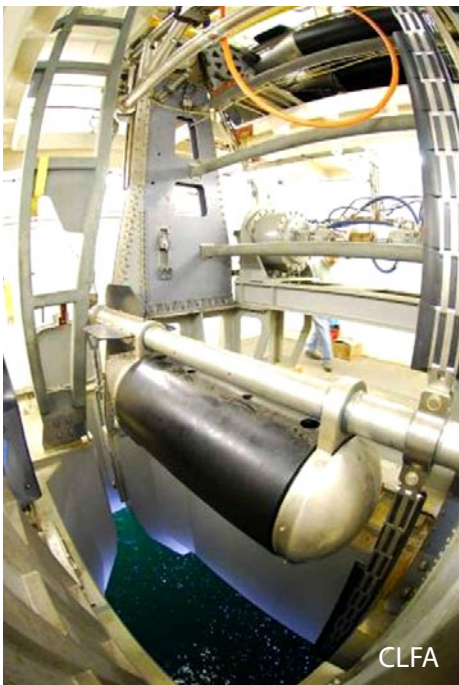
subject matter experts in the CASS ocean model to verify the technical approach to incorporate CASS in AMAIS and algorithms being used were valid. Finally, in September a new delivery order was awarded to model the TL-29 sensor, conduct a trade study of the optimum TL-29 Tactical Display, and address deficiency reports.

The Technical Director (TD) provides C4I acquisition and integration, System T&E, Reliability, Maintainability, and Availability (RM&A) verification, architecture and requirements, cost-estimating, continuous process improvement (CPI), configuration management (CM), system engineering, design review

support, and future capability and S&T planning. Focus areas in 2010 included documenting Maritime Surveillance Systems architectures, continuous process improvement (CPI), cost estimating, RMA analysis, and S&T planning. As the PMS 485 advocate for Open Architecture and Open Business Practice initiatives, the TD completed initial documentation of the IUSS architecture using DODAF views and a comprehensive interface control document. In support of continuous process improvement (CPI), the TD led three CPI projects addressing



CLFA



CLFA



T-AGOS-22 USNS LOYAL

improvements in IUSS Data Dissemination, ICP Test and Integration, and Contracting processes. Additionally, the TD implemented an on-line requirements management process during 2010 which was the direct result of a 2009 CPI effort focused on MSS requirements. A comprehensive reliability study was completed for the Gateway system. To support long range S&T investments

and capability planning, the TD completed a set of capability roadmaps that provide planning guidance, vision statements, and technology vectors for the IUSS community, and facilitated the formation of a formally designated Technology Advisory Group. The Gateway project team completed a trade study and selected the test site in Florida. Reliability studies were completed, the deployment plan was drafted and Trunk Cable was

acquired. The team began system component production and limited testing and implemented data communications protocols ensuring interconnectivity with a wide range of underwater assets.



PMS 495 – Mine Warfare

The PMS 495 Program Office was stood up 1 Jun 2004 with the consolidation of Surface Mine Warfare (PMS407) and Airborne Mine Warfare (PMS210) Program Offices. The mission of PMS 495 is “To Deliver Mine Warfare Capability to the Warfighter as Promised!” PMS 495 Systems provide Mining and Mine Countermeasure (MCM) Capability across the water column spanning the Beach Zone out to Deep Water.

PMS 495's portfolio includes:

- Organic Airborne Mine Countermeasures (AMCM) Systems comprising three ACAT II programs (AMNS, ALMDS, OASIS)
- Beach Zone and Surf Zone MCM consisting of two ACAT III Programs (COBRA and CMS) and an In-service JABS Program
- MCM Ship Class Combat System Modernization Program with one ACAT IVM Program (AN/SQQ-32 (V4) High Frequency Wide Band (HFWB)) and various modernization ECPs
- In-Service Support to AMCM and SMCM Fleet Combat Systems
- MINES Program with the QuickStrike Mod 3 Upgrade, and Exercise and Training Mine Shapes
- Supporting software programs (MEDAL, NSAM) and support equipment (ORCA, MHU-233, OAMCM Tow Cable)

Organic Airborne Mine Countermeasures (AMCM) Systems

The AN/AES-1, Airborne Laser Mine Detection System (ALMDS) provides detection, classification,

and localization capability against Near-surface and floating moored sea mines. ALMDS uses a high-powered blue-green laser technology Streak Tube Imaging Laser (STIL) Laser Imaging Detecting and Ranging (LIDAR), state of the art complementary metal oxide semiconductor cameras, and image processing. ALMDS is operated from the MH-60S helicopter and controlled by the MH-60S Common Console. It is part of the Littoral Combat Ship (LCS) MCM Mission Package. ALMDS transmits a fan shaped beam of laser light to establish its swath width and then relies on the forward motion of the helicopter to sweep the light over the water in a push-broom manner. Four cameras cover the same swath. As images are received, target algorithms pick out likely mine-like objects and store images for classification during post mission analysis (PMA). In FY10, LRIP Unit 3 was delivered for LCS Mission Package 2, and a contract for 4 units was awarded. ALMDS completed DT Phase 1 in Oct 2010 with 34 flights. In FY11, ALMDS will start DT/IT in Feb and OPEVAL in July.

The AN/ASQ-235 Airborne Mine Neutralization System (AMNS) provides organic airborne reacquisition, identification, and neutralization against bottom and moored sea mines. AMNS is operated from the MH-60S helicopter and controlled by the MH-60S Common Console. It is part of the LCS MCM Mission Package. AMNS employs the MK64 Mod 0 Destructor (also referred to as the Common Neutralizer) via its Launch and Handling System. During FY10, 2 LRIPs were delivered and a contract for 7 additional LRIPs

was awarded. Initial MIL-STD 331B (Fuze Safety) Testing was also completed during FY10. In FY11, DT Inert will resume in Feb 2011 while DT Live Fire is scheduled to begin in July 2011 following the completion of additional weapons qualification testing and Weapons Safety Certification of the Common Neutralizer in May 2011. Training for Operational Testing will begin in June 2011.

AN/ALQ-220 Organic Airborne and Surface Influence Sweep (OASIS) will provide a magnetic and acoustic influence sweep capability against bottom and moored mines. OASIS is operated from the MH-60S helicopter and controlled by the MH-60S Common Console. It is part of the LCS MCM Mission Package. OASIS uses an energized forward and aft electrode to create a magnetic field and acoustic generators mounted to the towed body. OASIS consists of a towed body that operates in a depth keeping, altitude keeping, or fixed wing mode and contains an onboard winch for deploying and recovering a sweep cable behind the towed body. In FY10, the EDMs were updated to the improved Body Mounted Electrode (BME) design. System testing continued in FY10 with Tower Test conducted in Nov 10 at CTC. In FY11, OASIS will conduct Air Worthiness Testing and commence CT on the MH-60S helicopter.

Beach And Surf Zone MCM Programs

AN/DVS-1 Coastal Battlefield Reconnaissance & Analysis (COBRA), Block 1 is a Multi-Spectral Imagery (MSI) system that provides the capability to

conduct unmanned aerial tactical reconnaissance in the littoral battle space for the detection of minefields, mine lines, and obstacles in the beach zone. The COBRA Airborne Payload Subsystem (CAPS) mounts to the MQ-8B Fire Scout Vertical Takeoff and Landing Unmanned Aerial Vehicle (VTUAV) and is deployed



from the LCS as part of the MCM Mission Package. COBRA gathers images in a step-stare pattern from an altitude of 3,000 ft at 85 knots. The COBRA sensor makes 3 steps in each of the 6 color bands with a resultant 330 meter swath width. After a mission, images undergo post mission processing with automated algorithms and operator review.

During Oct 2010, COBRA successfully conducted its 1st flight on the Fire Scout VTUAV at Yuma Proving Ground. Flight testing on VTUAV continues during FY11. COBRA Block I will award an LRIP Contract 2nd Qtr FY11. A Technology Readiness Assessment for COBRA Block II candidate technologies will be held 2nd Qtr FY11 preceding a MS B Decision. Block II adds

a surf zone and night time (darkness) detection capability.

The Countermine System (CMS) attacks surface laid and buried mines through a controlled dispense of countermine munitions. CMS is designed to neutralize mines and either consume the explosive fill or cause a detonation of the mine. CMS uses a precision guided, standoff munition capable of delivery by Air Force bombers and Navy tactical aircraft (TACAIR). The CMS Preliminary Design Review (PDR) was completed in the first quarter of FY10 and CMS Fuze Critical Design Review (CDR) was held 3rd Quarter FY10. Neutralizer development continued throughout FY10, leading to configuration down select for optimized beach and surf zone mine neutralization decision 3rd Qtr FY12.

Joint Direct Attack Munition (JDAM) Assault Breaching System (JABS): The GBU-31(V)1/B (USAF) & GBU-31(V)2/B (USN) are the designations for the weapons which are made up of the JDAM guidance tail kit (KMU-556/B); Mk84-4 (USAF) or BLU-117/Mk84-6 (USN) warhead; nose and tail fuzes, and the supporting lugs, plugs, arming wires and lanyards. The JDAM tail kit which contains an inertial navigational system and a global positioning system guidance control unit, converts existing unguided free-fall bombs into accurate "smart" munitions. Once released from the aircraft, the JDAM autonomously navigates to the designated target coordinates. Target coordinates can be loaded into the weapon before takeoff or manually altered by the aircrew before weapon release. JDAM is currently compatible with B-1B,

B-2A, B-52H, F-15E, F-18C/D, F/A-18E/F, F-16C/D, AV-8B and F/A-22. JABS Mission Planner Software is being incorporated into MEDAL and is scheduled for release with Build 11. With accurate targeting information, JABS is the surf zone/beach zone breaching capability of today in advance of the Amphibious Marine Assault. The JABS concept was integrated into NTTP 3-15.3, MCM In Support of Amphibious Warfare and the program office is collaborating with the Air Force to incorporate the JABS mission into appropriate Air Force doctrine. In an expanded role for JABS, ONR will transition JABS VSW (Very Shallow Water) to PMS 495 in FY11. The Program Office is planning FY12 JABS testing to further characterize the weapon in Very Shallow Water.

Modernization Program

MCM SHIP COMBAT SYSTEMS: PMS 495 is responsible for the upgrade/modernization of the MCM Ship Class Combat Systems, including modernization, replacement, and production of upgrades to existing systems. PMS 495 has completed upgrades for the Magnetic Cables, the OK-520 Winch, Communication System Modernization, Sonar data Recorder, and MEDAL. The final ship install of PINS(V)5 Navigation System NAVC2 / Battle Space Profiler (BSP) Upgrade will complete in CY11. Modernization efforts for the MCM Class Ships will continue into FY11 with Acoustic Influence Sweep (AAG/IAAG) and HFWB.

The AN/SQQ-32(V)4 High Frequency Wide Band (HFWB) is major detection sonar upgrade to the In-Service AN/



SQQ-32(V)3 system. The HFWB brings significant performance improvements in the detection of stealthy mines in high-clutter bottom environments, thereby improving the overall area clearance rate for the AVENGER Class MCM ships. It entails a form and fit implementation to the towed body, OK-520 Winch, tow cable, and operator consoles. The design utilizes fiber optic technology for system connectivity, to handle raw data rates in excess of 10 GB/sec to the shipboard processors. The AN/SQQ-32(V)4 implementation also reduces electronics obsolescence issues effecting availability. In FY10, HFWB received a MS C decision and awarded a Production contract with BAE Systems, Nashua N.H on 23 Sep 2010. A Production Readiness Review will be held Jan 2011 with 1st article test in Aug 2011.

Mining Program

Quickstrike Mine Mod 3 is an upgrade to the Quickstrike family of air-delivered bottom mines. The Mod 3 upgrade provides a programmable Target Detection Device which allows the mine

to be optimized for specific types of targets, plus enhanced safety design features. During FY10, development continued on intermediate maintenance equipment, algorithm adjustments, and production planning for small-bomb versions of Quickstrike Mod 3.

MEDAL and NSAM

Mine Warfare and Environmental Decision Aids Library (MEDAL) is the U.S. Navy's MIW Decision Support System, enabling and supporting forces with a single tool for Command and Control. MEDAL provides Tactical Decision Aid (TDA) functionality to the warfighter, along with integrated mission planning, evaluation, and situational awareness capability. MEDAL is currently fielded as an application within the Global Command and Control System Maritime (GCCS-M) or in a mobile configuration (1 server & 2 laptops) that can be operated in either a stand-alone mode or connected to shore based networks such as the classified Navy Marine Corps Intranet (NMCI) or Outside Continental U.S. Navy Enterprise Network (ONE-NET).

MEDAL is currently used by the planning staffs at NMAWC and Mine Warfare Squadrons (MCMRONS) during U.S. and Allied Operations and Exercises as well as members of the Mine Counter Measures (MCM) triad; Surface MCM, Airborne MCM and Undersea MCM. Classroom and online training is provided by the Mine Warfare Training Center in San Diego, California.

As the next generation of Mine Warfare systems continue to mature, the current version of MEDAL, Build 11, is updated to support their acquisition milestones. These systems include the Airborne Laser Mine Detection System (ALMDS), Airborne Mine Neutralization System (AMNS), Organic Airborne and Surface Influence Sweep (OASIS), Joint Direct Attack Munition Assault Breaching System (JABS), and the Coastal Battlefield Reconnaissance and Analysis (COBRA). MEDAL is also part of the Mine Warfare Mission Package Application Software (MPAS) and will be installed on the Littoral Combat Ship (LCS) Mission Package Computing Environment (MPCE).

During FY10, the program continued software development efforts on the next generation version of the software application which will migrate to a Service Oriented Architecture (SOA) baseline.

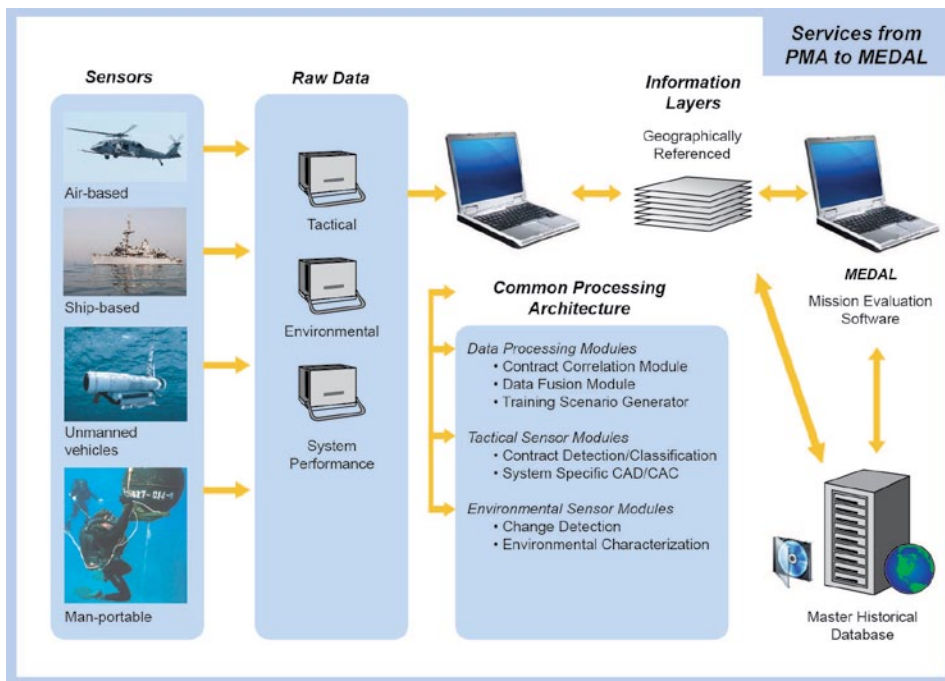
MEDAL Enterprise Architecture (EA). Users of the internet and web-based applications will be familiar with the look and feel of this new application. For this version of MEDAL, a significant effort was applied to the simplification and automation of the Mine Warfare workflows. In FY10, this included completion of the Commander's Estimate of the Situation (CES) capability.

While MEDAL EA is scheduled to field in 2014, the first product, MINEnet Global was installed in the Fall 2010. This capability provides Mine Warfare Situational Awareness for those users unfamiliar with Mine Warfare and a reference section for Mine Warfare users. MINEnet Global is available for authorized users at minenet.global.navy.smil.mil. It is hosted by the Mine Warfare environmental data providers at the Naval Oceanographic Office.

In FY10 the PMS 495 sponsored, MIW Community of Interest (COI) Data Standards group published the MIW Contact Model (v1.0), which is now implemented within MEDAL EA.

Net-Centric Sensor Analysis for Mine Warfare (NSAM) system will use the advantages of a network centric system to provide a common platform for multi-sensor PMA technologies, while reducing the post-sortie processing time. This integrated vision for PMA will enable improved mission effectiveness through improved PMA and associated system performance in MCM operations, and will reduce the overall MCM operational mission timeline. The NSAM system will include all current, necessary functionality for the detection, classification, identification and assessment of target engagements for naval mines and related Underwater Improvised Explosive Devices (U-IED) post-sensor or weapons sortie. The system will also determine sensor and weapon system performance through the characterization of the contextual tactical environment. Ultimately, the NSAM system will replace most, if not all, current PMA systems. NSAM will employ a single operator interface standard, thereby reducing training times and improving operator proficiency. NSAM will support Navy Open Architecture (OA) objectives by enabling application integration into an OA-compliant platform, facilitate efficient technology insertion and refresh through a Service Oriented Architecture (SOA) approach, and standardize Human Systems Integration (HSI) and Integrated Logistics Support (ILS) to reduce maintenance costs. A Prototype system will





that improves sonar resolution adds laser line scan for target identification, and resolves obsolescence issues. Official Material Support date was 1 Mar 2010.

An upgrade of the AQS-24A system with a High Speed Synthetic Aperture Sonar (HSSAS) is scheduled to begin in FY11. A Preliminary ECP and subsequent contract award are scheduled to be issued to upgrade 27 Systems, 8 maintenance sets and 10 CPMA conversions. This effort will also upgrade all tech manuals, training courses, APLs, and tactics documents. The ECP will be funded over 3 years. The first year will be a development effort for a first system prototype and operational test. The second year will entail completion of test by Northrop Grumman Annapolis and NSWC PCD and will begin manufacturing of ECP kits for field installation. The third year will be the installation of the kits that will take one week duration at the squadrons. This technology will be a 4X improvement over the current AQS-24A sonar resolution, 22% increase in speed at the same swath width. This upgrade will also reduce PC card count and future repair cost.

deliver 1st Qtr FY12, and the Program of Record will initiate in FY13.

SMCM In-Service System

Battle Space Profiler - Battle Space Profiler (BSP) consists of improvements to MCM Ships' sensor and analysis capabilities which provides a current profiler, a Hydro-Optics package, and a Bottom Sediment Classifier.

AN/SLQ-48 Mine Neutralization System (MNS) - Remote controlled tethered, unmanned submersible system that neutralizes both moored and bottom mines. During FY10 an obsolescence study was performed to identify opportunities to improve Operational Availability (Ao). One effort currently in progress is the overhaul of the Umbilical Cable Handling System (UCHS). During FY11, 6 non-RFI out of service units will be overhauled and returned to service to support MCM operations.

AN/SQQ-32 Sonar - Mine Hunting Sonar currently on-board MCM

Ships. This sonar will be upgraded with the AN/SQQ-32 (V4) High Frequency Wide Band.

AN/SSQ-94 Trainer - The Mine Countermeasures Simulator (MCS) is the MCM class onboard training system.

AN/SLQ-37(V)4 Influence Minesweeping System is used to clear influence actuated mines from an operating environment. The system has no minehunting or classifying capability. It is specifically used to reduce the mine threat probability and for neutralization by detonating mines in place.

AN/SNN-2(V)5 Navigation Upgrade - NAVC2 upgrades the current command and control (C2) system to incorporate ECDIS/N capability and resolves obsolescence issues. NAVC2 also upgrades the existing MCM navigation system.

AMCM In-Service Systems

AN/AQS-24A - The AQS-24A is a major upgrade to the AQS-14A

AN/ASQ-232 AMNS Rapid Deployment Capability (RDC)

- The AMNS RDC will be employed by the MH-53E helicopters, employing the SEA FOX Neutralizer to explosively neutralize unburied bottom and moored sea mines that are impractical or unsafe to counter using existing minesweeping.

MK-105 is a wide area magnetic and acoustic sweep system, towed by the MH-53E helicopter. The Turbo-Generator assembly

mounted on the hydrofoil platform is controlled and refueled through the Tow Cable by the airborne Control Programmer located in the helicopter. Electrical current produced by the Turbo-Generator passes through two electrodes, which make up the cable array behind the hydrofoil platform. The current passing through the electrodes produces a magnetic field, which imitates the magnetic signature of an un-degaussed ship, causing magnetic influence mines to detonate. System overhauls are continuing during FY11. In addition the MK-105 drawing package is being updated in preparation for the FY12 procurement of 2 systems.



A new procurement of 7M RHIBs has been placed under contract with Willard Marine for 6 boats in FY10 (delivery in Dec 2010-Jan 2011) and 6 boats in FY11. All logistics products (tech manuals, training courses, APLs and PUKs) will be delivered to support the first deployment of boats to OCONUS Detachments.

Mk-103 - Mechanical Minesweeping System is a diverted wire sweep used to counter moored sea mines. A tow wire, one to four sweep wires, a lead float, a depressor (to maintain sweep depth), otters (to divert sweep wires to port and/or starboard), MK-17 MOD 1 cutters, and various connectors and floats are used for the sweep. When a moored mine tether is encountered, an explosive charge drives a chisel through the mooring cable allowing the buoyant mine to rise to the surface. The floating mines are then neutralized by trained personnel.



SMALL BUSINESS & TECH TRANSITION

Ms. Sandel has made creating opportunities for small businesses a strategic priority. Mr. Victor Gavin, the Executive Director, has led the way in making Small Business big business at PEO LMW. Opportunities include both engineering support services and substantial involvement in the PEO technical programs.

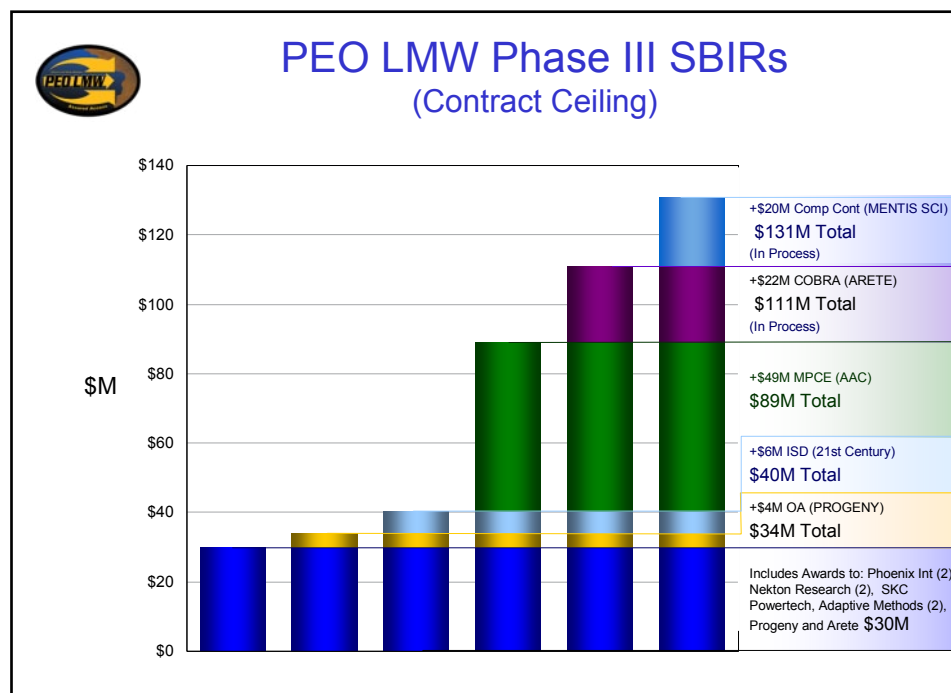
PEO LMW faces a wide range of technical challenges. Small businesses are well positioned to address many of these. To facilitate solutions to these challenges, we have established a Science & Technology Working Group, headed by Mr. Robert Gardenier (robert.r.gardenier@navy.mil). The S&T Working Group coordinates submission of proposals under Programs including: SBIR; Office of Naval Research (ONR) Technology Transition Programs such as Rapid Technology Transition (RTT),

Technology Insertion Program for Savings (TIPS), and Future Naval Capability Enabling Capabilities (FNC ECs); and Department of Defense (DoD) programs such as Defense Acquisition Challenge (DAC), and the Foreign Comparative Test (FCT) Program. The Working Group is highly focused on engaging small business participation in all of these opportunities.

As part of this effort, the PEO is including small businesses as an integral part of its acquisition programs through Small Business Innovation Research (SBIR) Program Phase III contracts with a new goal of awarding \$250M in contract ceilings by the end of FY2012. By the end of FY2010, PEO LMW had awarded or initiated contracting actions exceeding \$130M. (See Chart) One notable success in FY2010: two SBIR Phase II contracts were awarded to develop hand-held

biometric devices for the Identity Dominance ACAT IV program. Ultimately, PEO LMW will award a first-ever SBIR Phase III prime contract for an acquisition program.

In FY2010, PEO LMW participated in six conferences specifically targeted for small businesses, including women and minority-owned firms: giving presentations; staffing one-one one tables; and visiting booths. Through this outreach we strive to match program needs with small business capabilities. The goal is to fund at least one small business annually as a result of the conferences. In FY2010, PEO LMW awarded a contract a contract to an Hispanic owned small business to apply its unique technology to meet a requirement for Integrated Swimmer Defense.



INTERNATIONAL PROGRAMS



PEO LMW and the affiliated Program Offices have a vibrant international program. There are two key parts to our international program – Data Exchange Agreements (DEAs) and Foreign Military Sales (FMS).

Through the DEA program we have the opportunity to see what systems and technologies our allies and partners are developing. The DEA program is intended as a collaborative tool for the government to government exchange of RDT&E information on a reciprocal basis. A key goal of the DEA program is to establish and nurture relationships between the technical communities of the U.S. Government and the technical communities of other nations for future acquisitions and promoting broader defense relationships.

Although FMS guidance prohibits us from marketing our systems, we do work closely with our prime contractors as they market our systems to allies and partners. The process begins with our

industry partner asking us if the system they are developing or producing for us is releasable to a particular country. The Technology Transfer Security Assistance Review Board will dictate releasability. If we determine there is interest we will offer informational briefings to the potential customer on our systems. The key to the process is the teamwork between us, our industry partners, the in-country Office of Defense Cooperation, and the Navy International Program Office (NIPO).

We are getting a lot of foreign interest in our next generation Airborne Mine Countermeasures Systems. For example, Japan and Korea are showing interest in acquiring those systems. In addition many countries have expressed interest in our CREW systems. And many more countries have borrowed our CREW systems for use as force protection in theater. Another system to highlight is MEDAL, the official USN mine warfare Tactical Decision Aid. We are pursuing ways to provide MEDAL to our allies/partners. This will increase interoperability in support of the 1000 ship navy partnership.

Finally, we are supporting NIPO and U.S. Forces – Iraq in enabling Iraq to acquire a mine detection and neutralization capability for them to protect their oil fields and the port of Um Qasr.





PEO LMW INTERNATIONAL PROGRAMS



FY10 COMMITMENTS TO CUSTOMERS

As part of PEO LMW's Quarterly Executive Review process, we measure our performance in the eyes of our customers. Do we deliver what we say we are going to deliver on time? Do our products work as well as they should and are they available when needed? Do we support exercises as desired by our customers? In short, do we keep our promises to our customers? LMW's most significant commitments to customers are listed in the following tables.

PEO LMW EVENTS	FY10 Schedule							
	Q1		Q2		Q3		Q4	
	Planned	Actual	Planned	Actual	Planned	Actual	Planned	Actual
PMS-408								
JCREW 3.3 PDR					X	X		
JCREW 3.3 CDR							X	X
PMS-420								
MPSF IOC	X	X						
MPSF Deployment Support			X					X
SBTF Building Modification					X	X		
PMS-480								
Complete R2 SRR/SFR	X	X						
DexNet-L MAST 01,05,07			X	X				
DexNet-M Upgrade for MSRON 2 and 5					X	X		
PMS-485								
ICP SRR	X	X						
T-20 AST #3 (USNS ABLE)			X	X				
T-23 SCT for ICP (USNS IMPECCABLE)			X					
T-23 AST #2 for ICP (USNS IMPECCABLE)			X	X				
T-20 SCT / Start Fleet use (USNS ABLE)					X			X
OPEVAL for CLFA							X	

FY10 PEO LMW EQUIPMENT DELIVERIES

PEO LMW EQUIPMENT DELIVERIES	Qty	Contractor/ Activity	FY10 Schedule							
			Q1		Q2		Q3		Q4	
			Planned	Actual	Planned	Actual	Planned	Actual	Planned	Actual
PMS-408										
CREW 2.1 (CVR)V2)	737	ITT					350		387	117
Radiac Set,AN/PDX-2	45	VARIOUS / EODTECHDIV	15	15	15	15	5	5	10	10
Transmitting Set, Countermeasures,AN/PLT-5	100	SNC							100	30
MK 15 MOD 1 Underwater Imaging System	15	Teledyne / RDI			2		8	3	5	12
Joint EOD Decision Support System Mobile Field Kit	51	VARIOUS / EODTECHDIV					51	51		
PMS-420										
Surface Warfare (SUW) Mission Package #2	1	NSWC Dahlgren			1	1				
PMS-480										
VBSS XTS-2500 Radios	810	NSWC Crane					390	390	420	420
PMS-485										
J-2 ICP Installation	1	Lockheed Martin	1	1						
TL-29A Conversion Array Delivery	1	Lockheed Martin			1			1		
Array Mitigation	1	JHU/APL & Others			1	1				
ICP Build 4.3 Installation	1	Lockheed Martin					1	1		
T-21 CLFA Conversion (USNS EFFECTIVE)	1	BAE/SSI/II/SSC PAC/NFESC							1	1
PMS-495										
Airborne Laser Mine Detection System (ALMDS)	3	Northrop Grumman		1	3	2				
Airborne Mine Neutralization System (AMNS)	1	Raytheon			1			1		

FY10 EQUIPMENT AVAILABILITY

EQUIPMENT AVAILABILITY (Ao)	FY10 Ao THRESHOLD (%)	ACTUAL Ao (%)			
		Q1	Q2	Q3	Q4
PMS-408					
EOD Robot MK 1 MOD 0	80	92	92	87	86
EOD Robot MK 2 MOD 0	80	81	82	76	76
Search-Classify-Map (SCM) UUV MK 18 MOD 1	80	100	98	100	66
Marine Mammal Systems	75	79	80	80	68
2.1 CVRJ	90	99	99	97	98
2.1 MMBJ	Transferred to USA	N/A	N/A	N/A	N/A
Jukebox	90	99	N/A	N/A	N/A
Symphony	N/A	80	86	81	92
QRD	90	96	96	92	N/A
PMS-485					
SURTASS	88	99	99	98	98
Low Frequency Active (LFA)	80	100	100	100	N/A
PMS-495					
AN/SLQ-48(V)1	89	72	75	70	70
AN/SLQ-37(V)3	76	74	75	71	71
AN/AQS-24A	65	75	75	75	75
MK105 MOD 4	50	67	67	67	67
PINS (V)5	90	93	92	94	94
AN/SQQ-32	CLASSIFIED	N/A	N/A	N/A	N/A





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